

PULP & PAPER

MARCH 1959

Fraser Rebuilds, Ups Speed

page 64

Versatility at Chillicothe

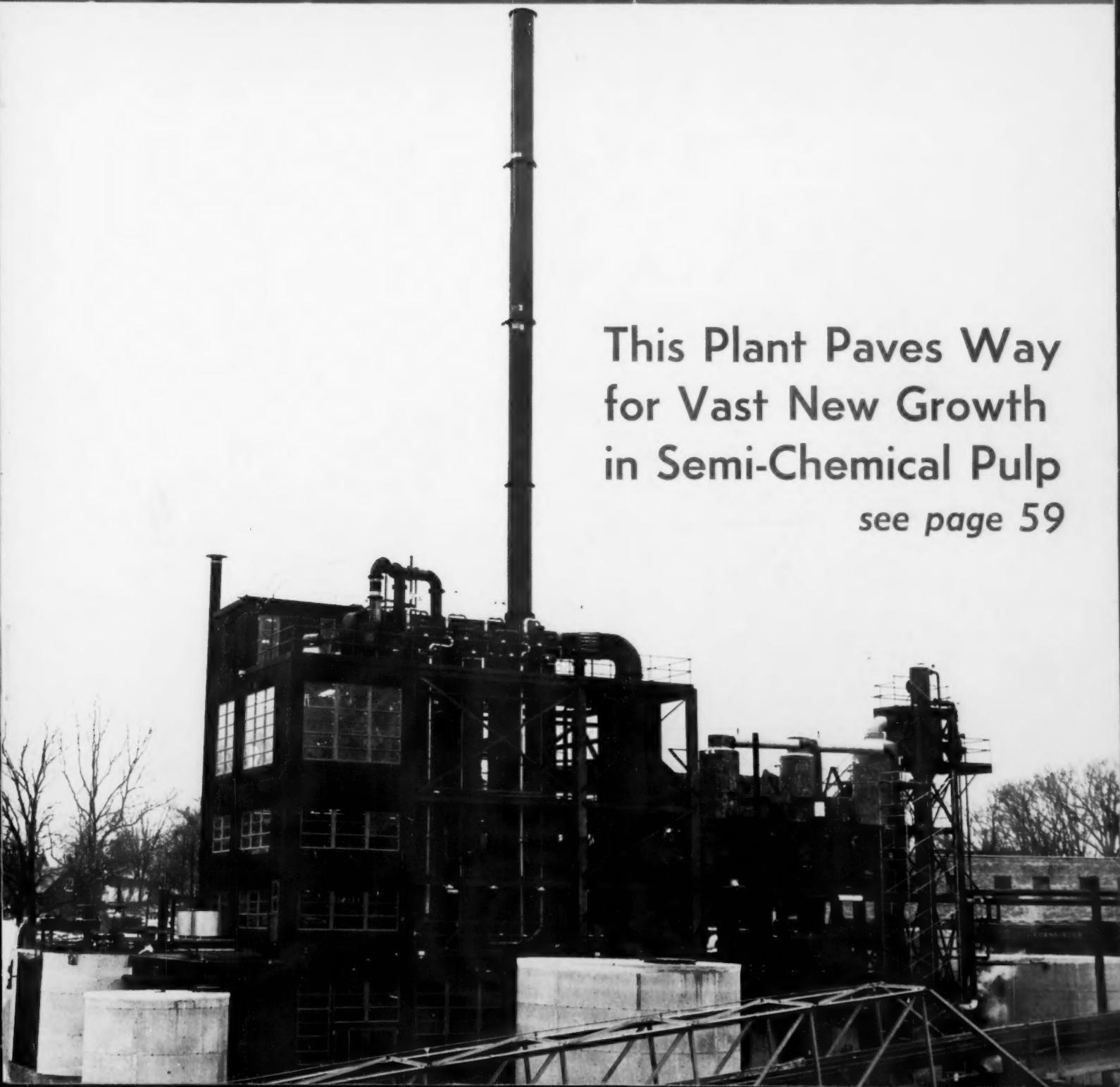
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Chip Pipeline in Woods

page 103

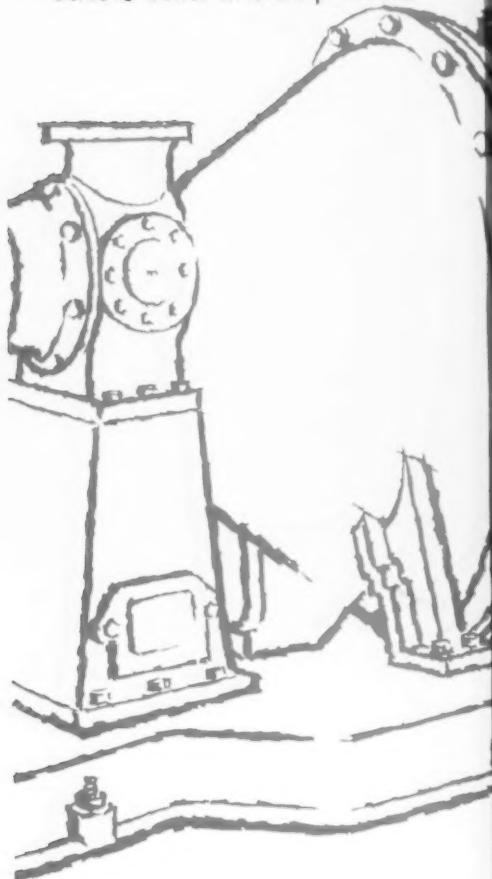
This Plant Paves Way
for Vast New Growth
in Semi-Chemical Pulp

see page 59



Here's the secret!

As in making HAMMERMILL BOND, more and more papermakers are relying on EMERSON CLAFLINS to achieve better finished products.

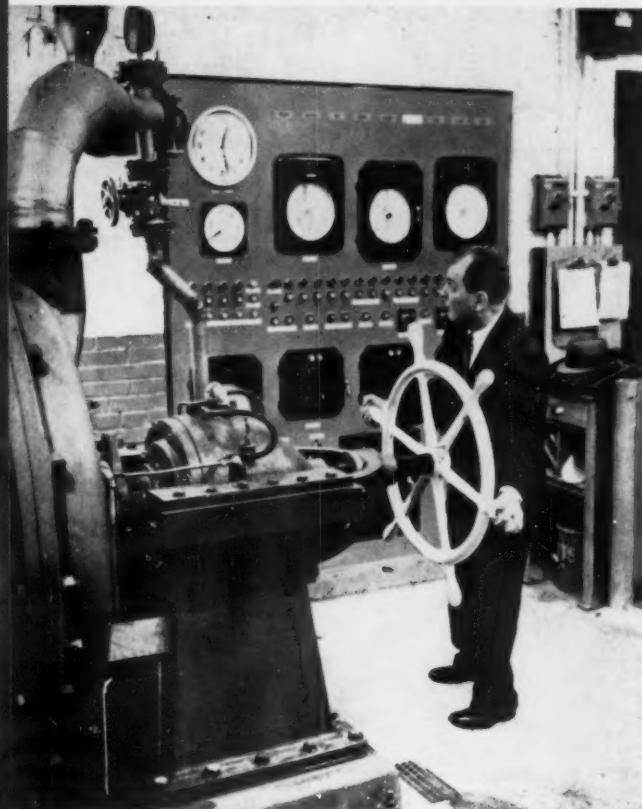


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BOND

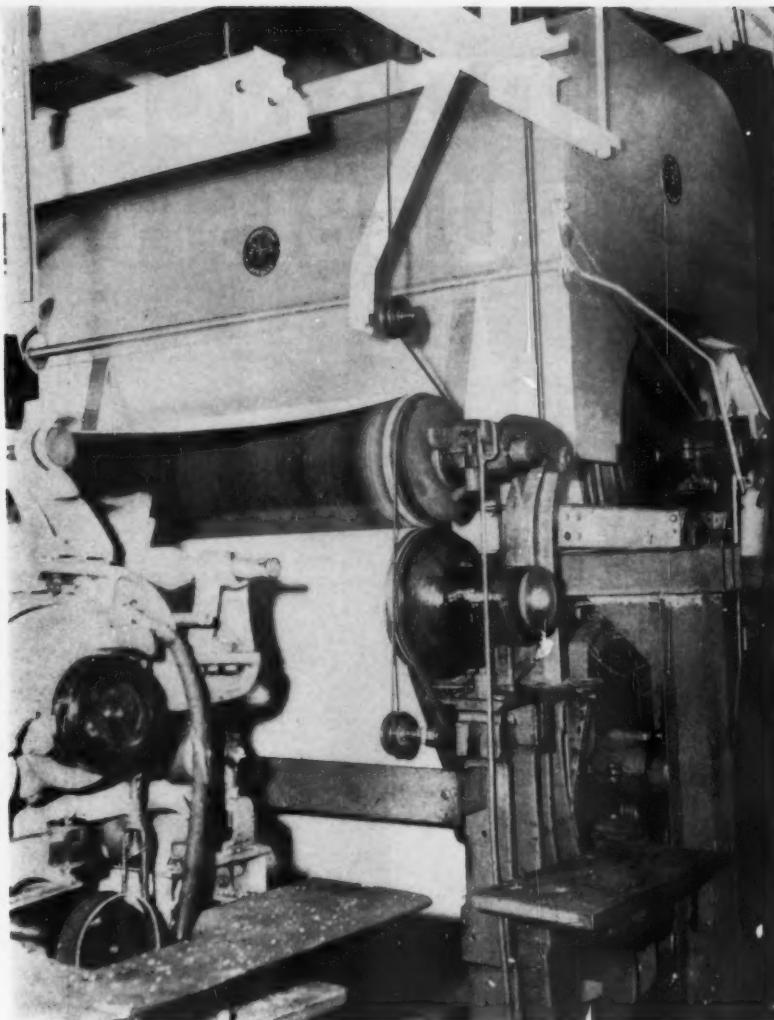
Go into the paper mill and learn the papermaking skills that Hammermill experts use in making Hammermill Bond. Find out how to knit fibers together more tightly as Hammermill does with a special machine that bears interlocking "fingers" onto each fiber.

Invent a special centrifugal pulp cleaner — as Hammermill did — to make paper outstandingly clean. Unlock the secret of using hardwoods to make fine papers even finer — as Hammermill has done with its Neutracer® pulp.

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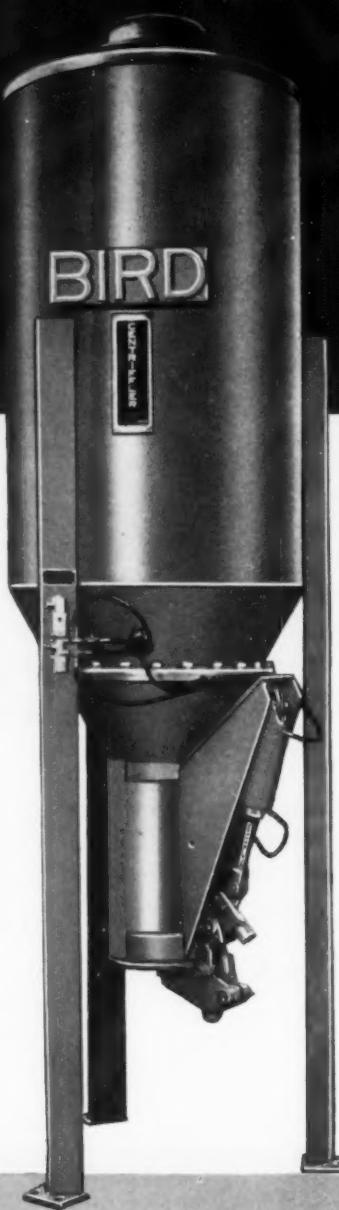
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BIRD CENTRIFFLER



This Bird Centriffler is equipped with an automatic dumping device. Quick acting manual dumping mechanism is also available.

New NSSC Recovery Process at Watervliet	59	Exclusive Report on Recovery Process	59
24-in. Fourdrinier Unveiled at WMU	62	Here is a special authoritative report for PULP & PAPER readers on the actual operation of new Mead recovery process at Watervliet, Mich. Its success may now unlock the door to greater expansion of semi-chemical pulping without stream pollution.	
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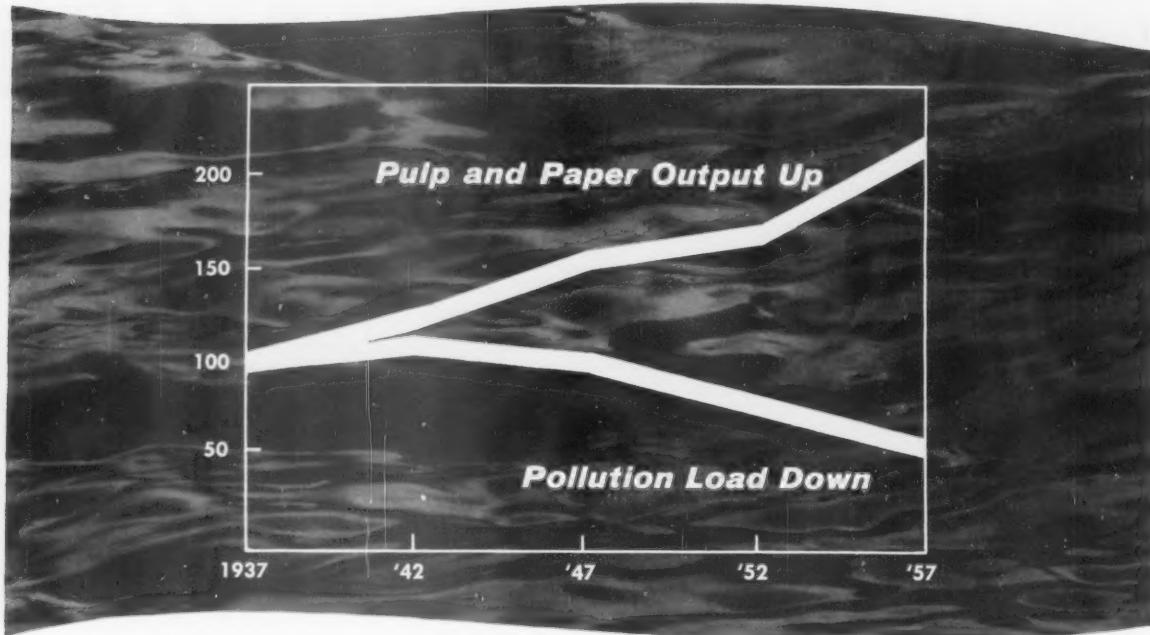
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PULP & PAPER

The Editor Reads His Mail



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PULP & PAPER — March 1959

Doubts 100% Bagasse Newsprint

—New Orleans.

Editor: I never have seen an article before with so much new and interesting information on bagasse pulping in Cuba as yours in the February issue of PULP & PAPER.

However, I do not believe the boast of the Cuban newspaper *El País*, which published the statement on its front page that it was printed on "100% bagasse." I realize this was not your error, as you were merely printing what the paper claimed, and in quotes.

It is hard to believe the newspapers' technicians would not be able to determine if they used 100% bagasse, or were they letting national pride in bagasse successes carry them away? Anyway, I am sure all bagasse experts will agree that at least a small percentage of long fiber is necessary to be mixed with bagasse to make satisfactory newsprint. I would like to hear from others on this point.

P. W. MARTINEZ

Among the Folks in History

—Tacoma, Wash.

Editor: I am wondering if we are reaching the point in our high-speed industry when the old-time papermaker is going to be completely forgotten. What column in your fine publication — or any other in the pulp and paper industry — ever mentions old Joe Blow who started this mill or that in the wilds of some virgin forest terrain? Surely, an obituary tells of the last stage of many a fruitful career.

In a local monthly tabloid sheet our company publishes, we ran a picture dated 1915 of a group of papermakers at Powell River, B. C., barefoot and all. It created a mild sensation. What would such a piece do for your magazine if companies and individuals would cooperate in supplying pictures and information on those people to whom we owe so much?



Sidney Dolan

Liked Article on Fees for Services to Forest Owners

—New York.

Editor: Regarding your article entitled, "Should Industry Charge Small Forest Landowners Fees?" in the Feb. issue of PULP & PAPER, I am very glad that it is getting wide circulation. At a recent meeting of the Forest Industries Council in Florida, I discussed the main points in your article with several Association leaders, and they were very much pleased that PULP & PAPER has published it. This approach of having landowners and others pay for these specific services they receive has been long overdue. You have done a nice job in presenting this subject.

W. S. BROMLEY
Executive Secy.-Treas.
American Pulpwood Assn.

Not a Dime

—Sultan, Wash.

Editor: It seems that if the pulp and paper world is going to grow to the extent that your magazine says by 1975, there sure is going to have to be some way of getting help to the right places. Not only in the form of backing but in the price of wood and the price of stumpage.

Why don't the big mills help the little men like myself to get the timber and the equipment that is needed to make a success of the job? Don't you think that it would be of benefit to the mills and everyone to get something started?

The thing I'm after is to try to get backing for the men who now are in pulpwood logging. Seventy-five per cent of the men who cut pulpwood can't get a dime from a bank or any other place. I know, I was there.

W. E. HORN

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MONTHLY REPORT - WORLD NEWS

TWENTY-THREE MACHINES FOR EUROPE . . . a survey made by PULP & PAPER INTERNATIONAL reveals that no less than 23 new paper machines are on order for Western European and Scandinavian countries alone—excluding Soviet Russia. France, Italy, Finland, Sweden, Denmark, Switzerland, West Germany and Britain have orders for one or more machines.

DOWN, BUT SLIGHTLY . . . Year-end estimates show 1958 U.S.A. per capita paper consumption down only 2 lbs. from 1957. The U.S. Dept. of Commerce predicts total paper and board production of 32,000,000 tons in 1959. The United Nations foresees a total North American output of 40,500,000 tons for 1960-62.

RAPID EXPANSION IN NEW ZEALAND . . . Forest products industries are investing £8,000,000 (U.S. \$22 1/2 million) in new machines and mills. Output is being stepped up in newsprint, woodpulp, tissues and other papers, imported prior to World War II. Capital invested now approximates \$170,000,000.

PULP AND PAPER RESEARCH SLIGHTLY BEHIND . . . other industries, according to a recent McGraw-Hill survey. Allocated for 1958 industry research was \$50,800,000, about \$57,900,000 has been planned for 1961, an increase of 14%. This compares with an all-industry increase of 19% and boosts of 20-23% in such fields as ceramics and rubber.

NEWSPRINT ON INCREASE IN SOUTH AFRICA . . . where a \$7,500,000 mill (about £2,700,000) is set to go into production in 1961. The 185-in. trim machine now on order will have initial capacity of 35,000 tons, will eventually be increased to 65,000. Bulk of the newsprint will be taken up by newspapers in the Orange Free State, Transvaal and Kimberly.

NEW BAGASSE MILL IN MEXICO . . . Inauguration of cane bagasse pulp and paper mill was a recent industrial event in Mexico City. The plant uses new depithing and fiber selection processes developed by

Dr. Dante Sandro Cusi and is jointly owned by him and Scott Paper Co. of U.S.A. Two grades of pulp are made—some for Scott trademarked tissues and other paper grades, and some as quality market pulp now in strong demand. Dr. Cusi and Scott have also formed a company to license the process.

NEW TONNAGE INCREASES IN SOUTHERN U.S.A. Latest machines to go into operation are the big No. 4 (newsprint) at Bowaters Southern, Calhoun, Tenn., and Union Bag-Camp's 236-in. Fourdrinier (bleached kraft) at Franklin, Va. Both are Beloit Iron Works units. Set for early spring start-up are Halifax Paper's new 246-in. Beloit and the new 230-in. high-speed Fourdrinier at Champion Paper & Fibre in Canton, N.C. The latter is expected to be the first "big" machine to produce fine paper grades.

TRADE INCREASE FOR SWEDEN, U.S.S.R. . . . At year-end Sweden and Russia announced an agreement providing for an increased exchange of goods over a three-year period, upping the trade level between the two by about 50%. Major Swedish exports to Russia during 1959 will consist of equipment for the pulp, paper and mining industries.

EXTENDS WOOD PRODUCTS ACTIVITY . . . Simpson Timber Co. of Seattle, Wash., U.S.A., has set up a new subsidiary in the wood products field. Simpson Engineered Wood Products Co. will design and sell products "in whatever shape or form wood can be processed."

BIG PRODUCTION INCREASE FOR HUNGARY . . . It is planned to up output from 103,000 tons to 133,500 tons in the next two years. Csepel paper mill will spend about \$16,500,000 (about £6,000,000) for a new power plant, modern papermaking equipment and a new corrugated operation. Other mills planning increases in paper production include the Szolnok bag factory and the Buda box plant.

B.F.Goodrich



Photograph courtesy of Hammermill Paper Co.

B.F.Goodrich size press rolls stand heat, last longer

THAT B. F. Goodrich roll has a smooth, highly polished surface that makes it ideal for use on a size press. It is completely free of blisters and other imperfections that cause sheet marking.

B. F. Goodrich developed a special heat-resisting rubber compound for this roll to resist the effects of warm sizing wax and heat from the dryer. Surface checking has been virtually eliminated.

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And the Vulcalock process seals the ends, where corrosion starts in ordinary rolls, by bonding the rubber cover over the core edges. This special end seal reduces edge checking and cracking, so B.F.Goodrich rolls do not need to be reground as frequently as other rolls.

The B.F.Goodrich size press roll shown above has been in use six years at a leading paper company, helping to produce their high-quality line of bond

papers and other fine papers for business and advertising use. This record is typical of the improved performance and longer service life that can be expected with B.F.Goodrich paper mill rolls.

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B.F.Goodrich *industrial products*

MONTHLY REPORT - WORLD NEWS

ST. REGIS IN BRAZIL . . . where it has purchased a 20% interest in Companhia Industrias Brasileiras Portela S.A. The South American firm, with a monthly capacity of about 1,600 short tons, will supply St. Regis multiwall bag plants in Brazil.

NEW FINE PAPER MILL FOR BRITISH COLUMBIA . . . Powell River Co. Ltd. will locate a proposed plant on Annacis Island at the mouth of the Fraser River. Supplying the 120-in. machine will be Dominion Engineering. It will have an E. D. Jones stock preparation system. . . . A proposed flakeboard plant at New Westminster is part of Powell River's over-all \$8,000,000 expansion.

RED CHINA CLAIMS 28,000,000 ACRES . . . In its first five-year plan the Pieping regime claims to have planted trees on an area greater than the combined forests of Great Britain, Belgium, the Netherlands, Greece and Italy. Recognizing the power of wood cellulose in world trade, China hopes to double her forest area in 10 years.

SCOTT PAPER CO.'S RECORD-BREAKING fourth quarter in sales and earnings before taxes has been credited to "successful efforts to control costs and increase efficiency", according to President Thomas B. McCabe of the American company.

DANISH INTERESTS IN AFRICA . . . are building a \$700,000 (£250,000) paper mill near Nairobi, Kenya. The plant was assembled in Denmark, dismantled and shipped to Africa. Initial daily production: 10 tons of wrapping or cardboard. All equipment is being supplied by the Danish Columbus Group.

PILOT PLANT TO MAKE BAGASSE PAPER PULP . . . Crown Zellerbach Corp.'s Central Research dept. at Camas, Wash., U.S.A., is producing pulp from sugar cane bagasse for test runs on a laboratory paper machine. Research is sponsored jointly by CZ and the Hawaiian Sugar Planters Assn.

EUROPE REFLECTS MECHANICAL PULP DEVELOPMENTS . . . First mill in continental Europe to use the straight mechanical pulp and untreated chips process is Papeteries de Clairefontaine in Vosges, France. Used for defibering the chips in two stages are Bauer double-disc refiners. Preliminary research was done by United States Machinery Co. at the Bauer lab in Springfield, O., U.S.A.

ELIMINATION OF GASEOUS KRAFT ODORS is the aim of a pilot plant being constructed at the St. Regis Paper Co. mill, Tacoma, Wash., U.S.A. The unit will test findings of the Pulp Mills Research Project at the University of Washington. It is hoped that gases from various production sources will be successfully collected and concentrated, then rendered harmless and odorless by burning.

BIGGEST PAPERBOARD MACHINE in Common Market is Feldmuhle Papier- und Zellstoffwerke's new 154-in. wide combination cylinder-Fourdrinier machine. Located at Feldmuhle's Arnsberg, West Germany mill, the Dorries machine doubles mill capacity of cardboard, makes it top-ranking Common Market producer.

PICKUP IN EXPORTS WILL GAIN GROUND IN '59 . . . That's the prediction of many U.S. exporters who are using price cuts, easier credit and new products to spur foreign sales. Foreign customers' increasing supply of dollars is contributing to the trend. Though exports account for only about 4.5% of the nation's gross output of goods and services, for many firms they mean the difference between profit or loss in overall operations, according to The Wall Street Journal.

OFFICE DUPLICATING PAPERS CHEW UP 600,000,000 lbs. of paper/year in the U.S.A. That means a market over \$100,000,000. That's what Hammermill Paper Co.'s manager of advertising and sales promotion, Harold Wilson, reports. Hammermill recently unveiled its new line of Graphi-copy paper for this market.

Which of these 3 products and services can you use from BECCO?

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Looking for a way to use greater amounts of low-cost, more plentiful pulp—without capital investment for bleach equipment? Then let a Becco Sales Engineer show you our new technique* which allows you to bleach in the same equipment regularly used for the manufacture of cold caustic pulp.

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*—Patent Pending

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MONTHLY REPORT - WORLD NEWS

PRODUCTION OF SLITTERS, WINDERS AND RE-WINDERS was up 60% in 1958 over 1957 at Samuel M. Langston Co., Camden, N. J. The purchasers: paper and board mills.

DOUBLES EXTENSIBLE PRODUCTION . . . West Virginia Pulp & Paper Co. has converted its No. 2 machine at Charleston, S.C., into a second "paper that stretches" (Clupak) unit. No. 2 is one of the firm's largest Fourdriniers. Annual capacity for this new product now stands at 150,000 tons.

IN THE MIDDLE SOUTH: PULP AND PAPER LARGE AND GROWING . . . According to the Middle South News, pulp and paper is one of the area's largest and fastest growing industries. In 1958 three states only (La., Ark. and Miss.) employed 30,000 workers, had a payroll of \$140,000,000 and spent \$145,000,000 in new mills or additions. Its 1957 capacity totaled 2,900,000 tons—11% of the national total.

NEW COATER AT ST. MARYS . . . St. Marys Kraft Corp. in St. Marys, Ga., has completed installation of a new coater on its No. 2 board machine. The Beloit Iron Works trailing blade unit wipes excess coating off the dry sheet and permits it to flow back into a metering system that controls the application of coating material. Expander rolls ahead of the first dryer and ahead of the coater spread the sheet.

CROSSETT EXPANDS FOODBOARD CAPACITY . . . By adding 29 dryers to the cylinder machine Crossett Paper Mills has increased the speed of the unit and upped production from 160 to 215 tons daily. The addition includes more refining equipment and changes in the hardwood pulp mill and bleach plant. Handling the job is Rust Engineering Co., Birmingham, Ala.

MARKETABLE SHEET 90 MINUTES AFTER START-UP . . . That's the record at Southland Paper Mills Inc., Lufkin, Tex. The record is claimed for the firm's new Pusey & Jones Corp. Fourdrinier machine—Southland's fourth and biggest.

FIRST CLUPAK LICENSEE is International Paper Co. which will install its first extensible papermaking unit on a kraft paper machine at its Camden, Ark. mill. West Virginia Pulp and Paper Co. has also become a licensee and will add a second Clupak unit on another kraft machine at Charleston, S.C.

HOPSCOTCHING THE NORTH AMERICAN INDUSTRY . . . Continental-Diamond Fibre Corp. will build a \$350,000 research center at Newark, Del., U.S.A. . . . Crown Zellerbach Corp.'s Gaylord Container Corp. div. has acquired facilities for the production of corrugated shipping containers at Chicago, U.S.A. . . . Stone Container Corp. has purchased Campbell Box & Tag Co., South Bend, Ind., U.S.A. maker of folding cartons, tags and paperboard specialties. . . . In production is Crown Zellerbach Canada Ltd.'s new \$300,000 corrugated container plant at Kelowna, B. C., which supplies the province's fruit and vegetable industry. . . . Wilco Machine Works Inc. of Memphis, Tenn., U.S.A., will construct several flakeboard plants using the new Dorr-Oliver process; the plants will be in Michigan, Indiana, Florida and New England. . . . St. Regis Paper Co.'s Dubuque Container Co. div. has installed a two-color unitized Miller-M. A. N. offset press. . . . Cornell Paperboard Products Co. of Milwaukee, Wis., U.S.A., has acquired Rathborne, Hair & Ridgway Box Co., producer of wirebound boxes, crates and corrugated shipping containers. . . . Puget Sound Pulp & Timber Co., Bellingham, Wash., U.S.A., will install a 100,000-lbs. per day spray dryer for the production of waste sulfite liquor by-products; the Bowen Engineering unit is part of a \$400,000 expansion program. . . . National Vulcanized Fibre Co., Wilmington, Del., U.S.A., plans the acquisition of Parsons Paper Co., Holyoke, Mass., producer of cotton-content bonds, ledgers and index Bristols and paper specialties. . . . Scott Paper Co. has launched a multimillion-dollar warehouse expansion at Chester, Pa., Detroit, Mich., and Everett, Wash., U.S.A.

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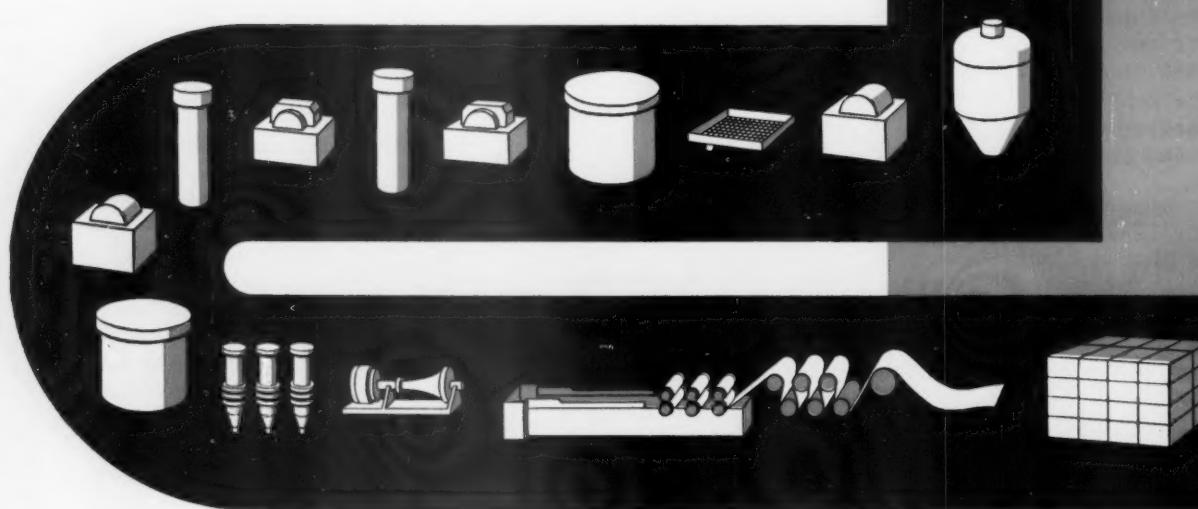
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Cotton Linters Pulp Plant at Memphis, Tennessee



Buckeye Pulp

Bleached and Semi-Bleached Kraft from Southern Pine

New Paper Strength Test

UNGER, ERNST. Zellstoff u. Papier 7, no. 4: 108-16 (April, 1958). [In German] Abstr. Bull. Inst. Paper Chem. 29: 79-80.

In an introductory evaluation of various criteria of paper strength, tear-through was recognized as the most important strength property. This opinion was corroborated by a new test method which makes it possible to reproduce the stresses to which the paper structure is exposed in considerable measure in practice. The property measured by the newly developed instrument has the same character as the tear-through determined according to the Elmendorf or Brecht-Inset methods, rather than that of a breaking length. The characteristics of breaking length disappeared and those of tear-through appeared at stress angles as small as 1°. Results obtained with the new test method seem to relegate breaking length to a place of secondary importance. The new tear-through test is simple, rapid, and requires no sample preparation. Several paper samples can be superimposed and tested simultaneously to give improved average values. In principle, the apparatus can be used to evaluate initial tear and initial wet tear, as well as initial tear and tear-through after folding.

C.L.B.

**Washing Kraft in Diffusers—
Russia**

GRABOVSKI, V. A., NAMESTNIKOV, I. V., and YAROTSKII, B. E. Accelerated washing of kraft pulp in diffusers. Bumazh. Prom. 33, no. 4: 16-18 (April, 1958). [In Russian] Abstr. Bull. Inst. Paper Chem. 29: 402.

Experiments conducted at the Leningrad Technological Institute showed that the washing of kraft pulp in diffusers can be accelerated and made more efficient by preventing the concentration of the fibers on the false bottom and providing for a more uniform washing. This was accomplished at the Svetogorsk mill by a reconstruction of diffusers, involving the installation of a conical discharging device (at a distance of approximately 1.8 m. from the outlet valve) and of five vertical chains in the center of the apparatus to provide a guiding and reg-

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ulating surface. The washing time (with weak liquor and then with hot water) was shortened by 40%, and the rate of liquor transfer to the regeneration plant was increased. J.S.

**Water Hydrolysis of Wood—
Japan**

MATSUGU, T., and SHIRAIWA, H. Part 1. Changes in wood constituents during water hydrolysis. J. Japan. Tech. Assoc. Pulp Paper Ind. 12, no. 8: 507-10 (Aug., 1958). [In Japanese; English summary] Abstr. Bull. Inst. Paper Chem. 29: 424

Changes in the constituents of softwood (red pine) and hardwood (pasania) during water hydrolysis were investigated. The yield of hydrolyzed wood was higher for softwood than for hardwood. Cellulose dissolved more rapidly from softwood than from hardwood, whereas pentosan was removed faster from hardwood than from softwood. The majority of soluble lignin was extracted during the initial reaction. Pentosan and lignin contents were independent of temperature; their rate of removal appeared linearly related to the yield of hydrolyzed wood. C.L.B.

MATSUGU, T., and SHIRAIWA, H. Part 2. A kinetic study of pentosan removable. J. Japan. Tech. Assoc. Pulp Paper Ind. 12, no. 8: 511-13 (Aug., 1958). [In Japanese; English summary] Abstr. Bull. Inst. Paper Chem. 29: 424.

The main reaction in the water hydrolysis of wood is the removal of pentosan. For red pine, this reaction can be explained as the resultant of two first-order reactions, an initial rapid and a subsequent slower one. For pesania hardwood, pentosan removal occurred according to a single first-order reaction, assuming an 18% content of inactive pentosan under the conditions of hydrolysis used. The respective activation energies were 18.0, 21.0, and 33.4 kg.-cal. C.L.B.

Beater Additives in Germany

JUNGHANS, G., and RAPP, A. Wochbl. Papierfabrik. 86, no. 11/12: 526-30 (June 30, 1958). [In German] Abstr. Bull. Inst. Paper Chem. 29: 7-8.

Modified galactomannans yielding homogeneous solutions were used as beater additives in mill-scale trials. Those soluble in hot water were found to be more beneficial for the improvement of paper strength than were those soluble in cold water. A special modified galactomannan was developed which improved not only the strength properties of paper but also the retention of fillers and fibers on the paper-machine wire. The application of hot-water-soluble galactomannans on a fully industrial scale was made possible by the development of continuously operating dissolving equipment which requires no human supervision.

C.L.B.

Photochemical Chlorination

RAWAY, R. Chem. & Ind. (Paris) 79, no. 4: 444-50 (April, 1958). [In French; English, German, and Spanish summaries] Abstr. Bull. Inst. Paper Chem. 29: 9.

Mixtures of thoroughly fiberized unbleached pinewood kraft pulp (91.9% dry, 0.33% resin content, 3.86% lignin content, and having a viscosity of 53 centipoises) and dry gaseous chlorine were illuminated by monochromatic light (3655 m μ) in a reaction chamber in which air has been displaced by nitrogen. A photoelectric cell and a potentiometer were used to measure the amounts of light transmitted by chlorine. A linear relationship was observed between the initial chlorine concentration and the amount consumed in the photochemical chlorination. Assuming a first-order reaction, the reaction rate was determined and found to be constant during the initial stage (6 min.) and then to decrease gradually. After 45 min. of chlorination, the cupriethylenediamine viscosity of the pulps decreased to 3.2 cp. Exposure to light alone for the same length of time resulted in a decrease of viscosity to 44.7 cp. Unbleached pulp had an absorption maximum at 280 m μ , which disappeared after chlorination, indicating an addition of chlorine to the double bonds of the benzene rings in the lignin molecules. J.S.



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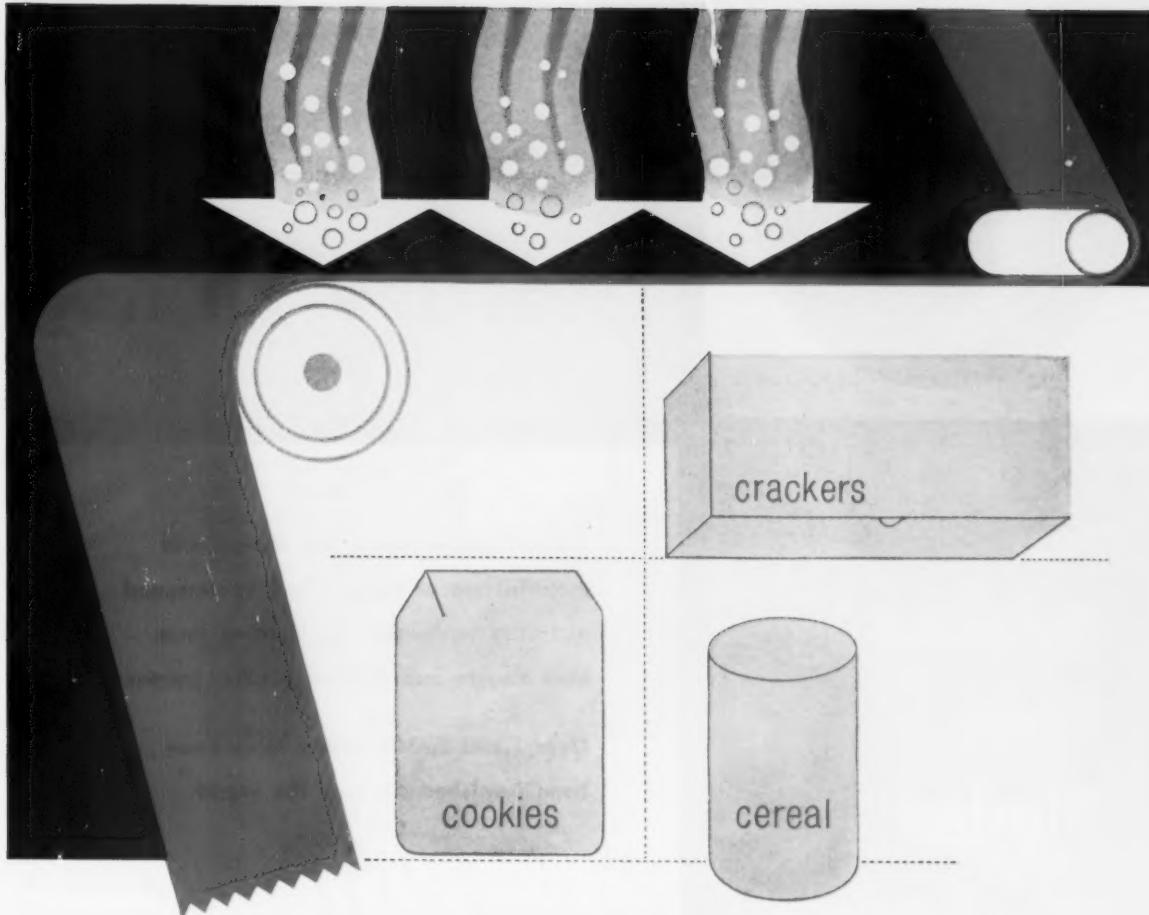
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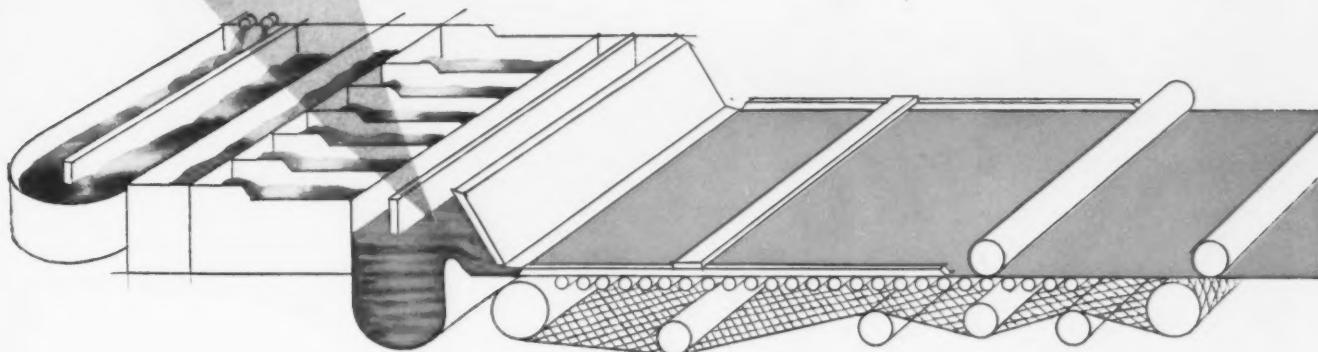
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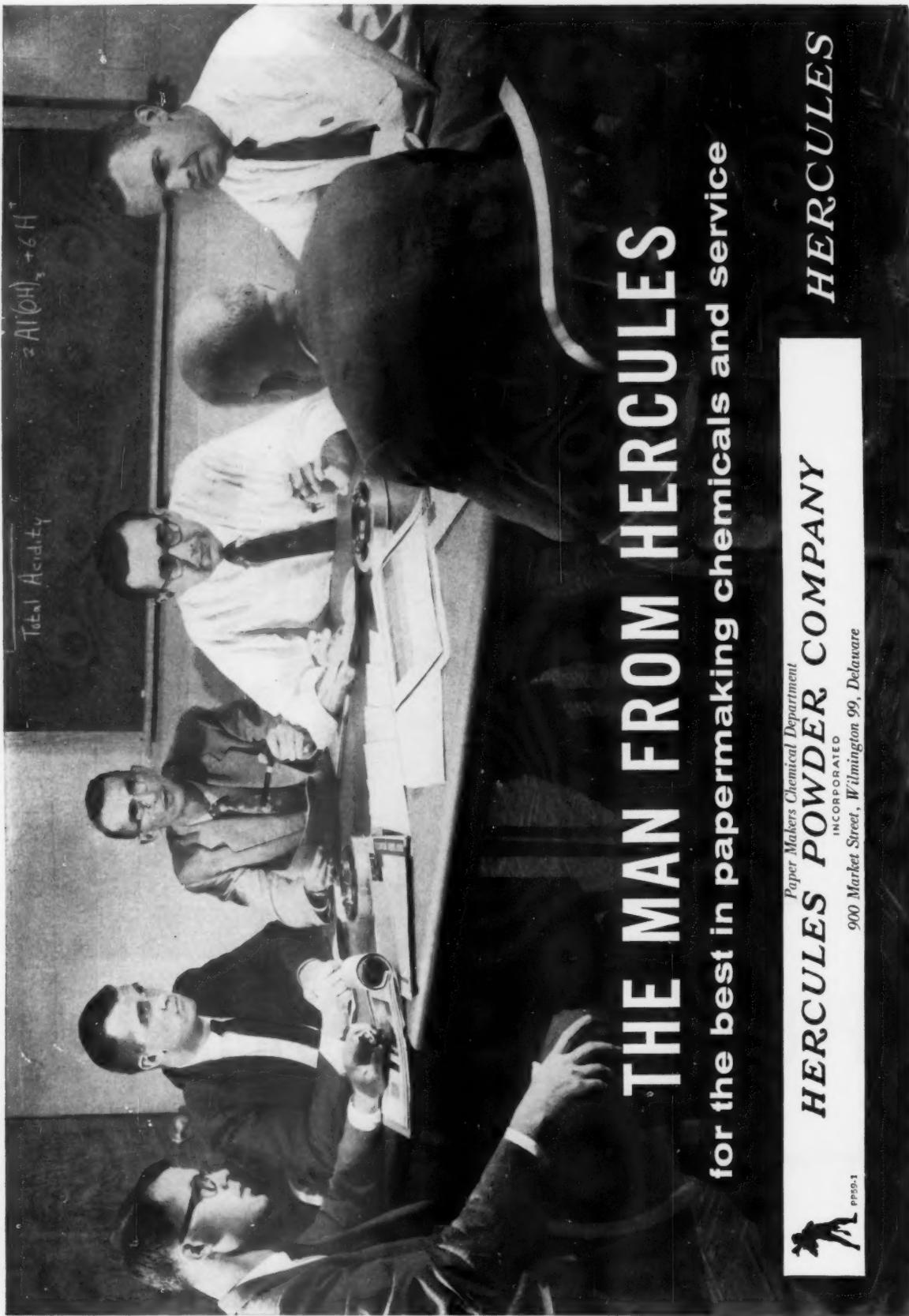
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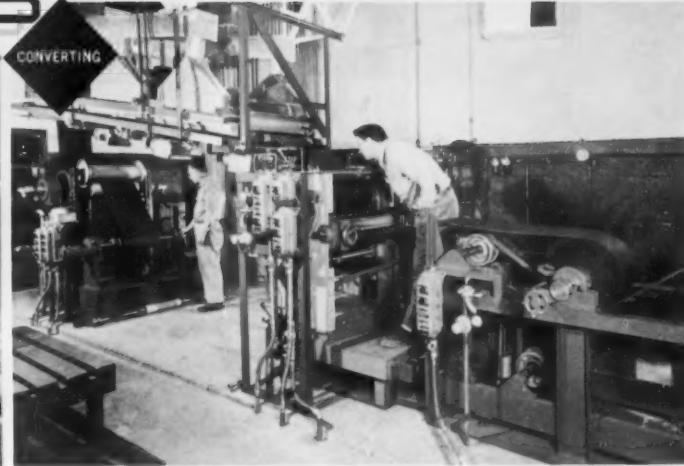
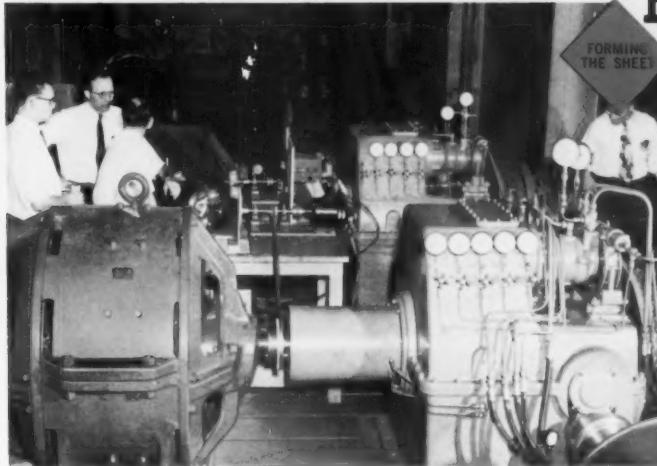
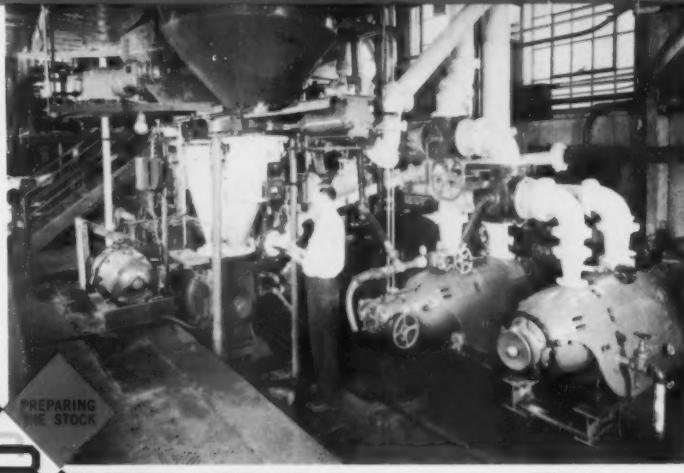
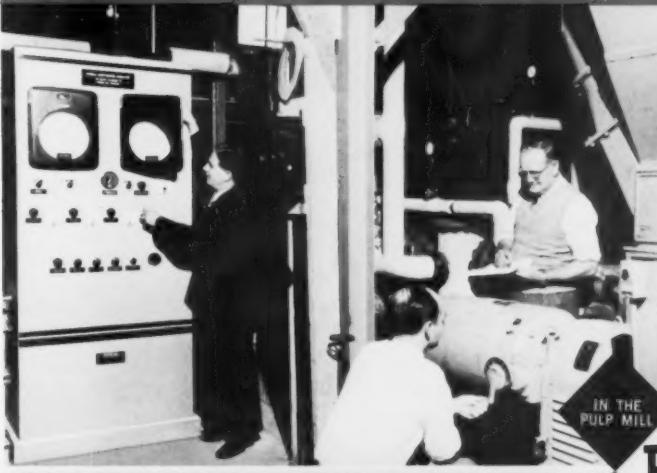
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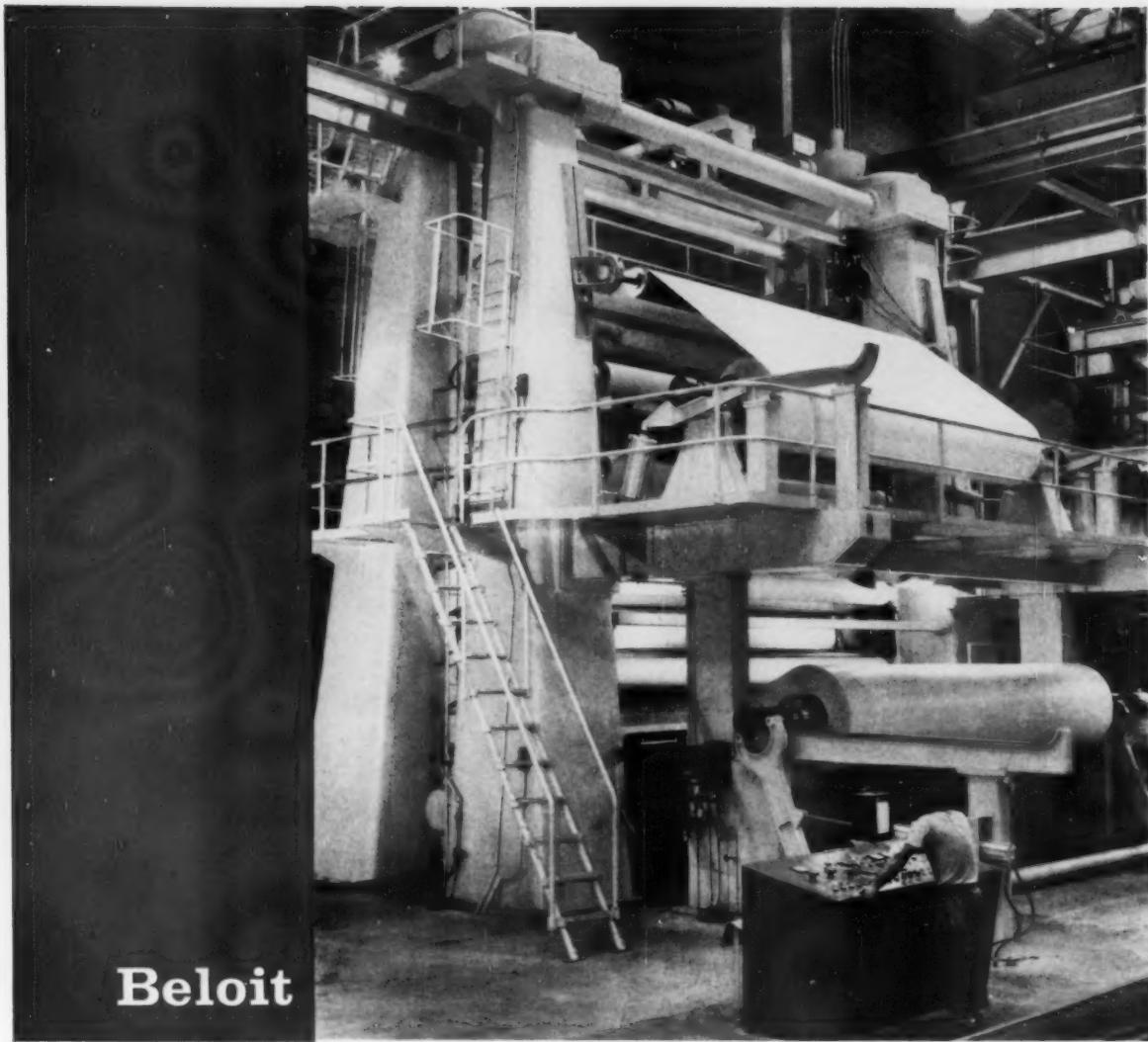
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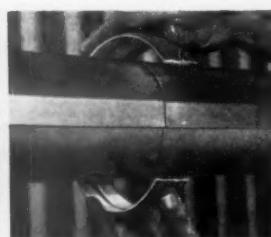
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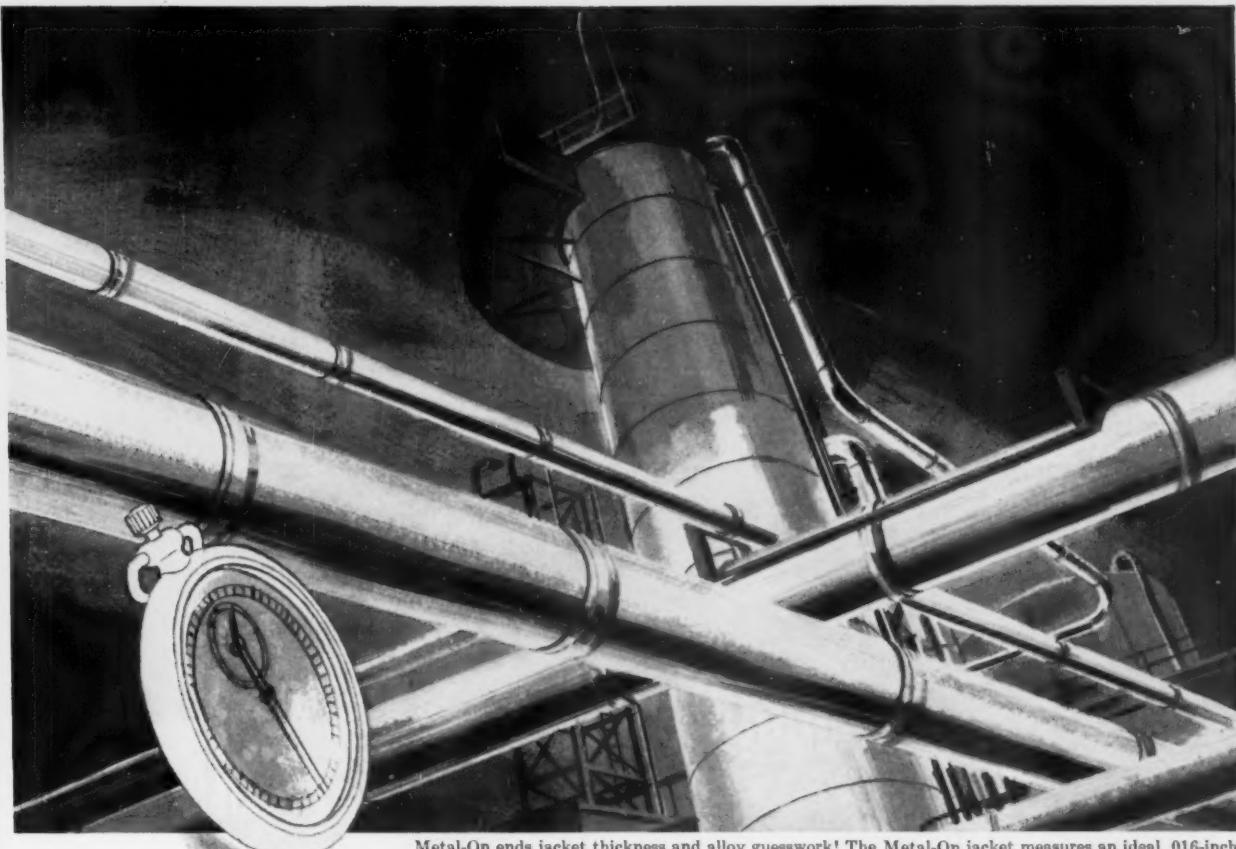
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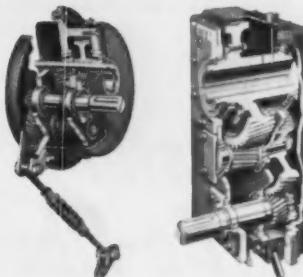
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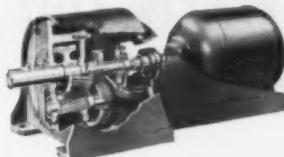
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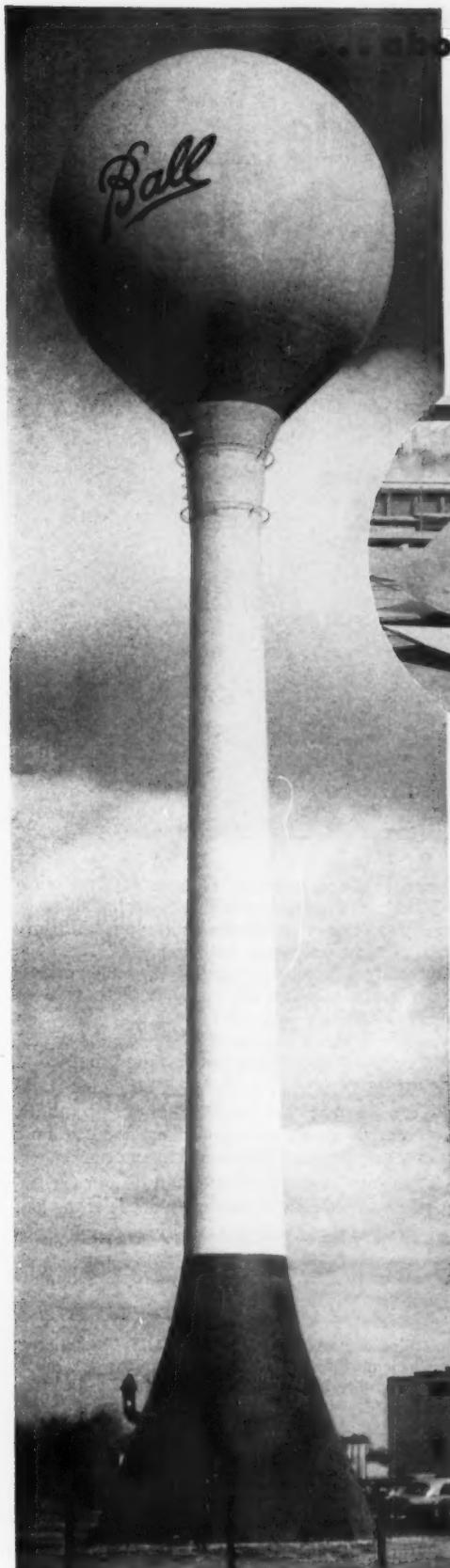
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d-i LESTOIL contains powerful wetting, penetrating, emulsifying and dispersing properties. It breaks down the adhesive qualities of ink, wax, asphalt and other contaminants and floats them out, leaving stock clean and free-flowing.

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But find out for yourself — at our expense — what d-i LESTOIL can do for you. For a generous free sample and descriptive literature, write today to:

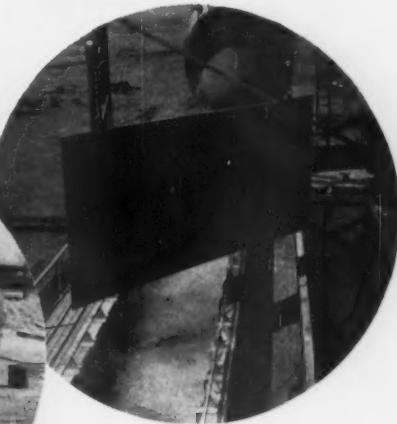
LESTOIL, INC. HOLYOKE, MASS.
a subsidiary of Adell Chemical Co.



about Weather and WATERSPHERES

How **CB&I** pickling process
promotes beauty and protection
for steel plate structures.

Plate coming from sulphuric acid bath where mill scale was removed.



◀ Plates receive special prime coat while steel is still warm.

The Horton® Pickling Process is an efficient, economical means of removing mill scale from steel. It serves to eliminate the "human element" in the process of cleaning steel prior to painting and provides a clean dry surface, with an iron phosphate coating, which improves the bond between paint and steel.

A thorough manufacturing-type operation, the process consists of immersing the material in a hot sulphuric acid solution, then a wash water bath—followed by a hot phosphoric acid bath. Special priming paint is applied immediately after pickling . . . while metal is still warm to insure better bond.

Facilities for pickling and painting are now maintained at all of our four, strategically located plants. Write for information on how this efficient service can help extend the life and reduce the maintenance on *your* next CB&I structure.

◀ This 100,000-gal. Horton Watersphere® was pickled and painted before shipment to Ball Bros., Hillsboro, Illinois, nationally known manufacturer of glass jars.



Chicago Bridge & Iron Company

Atlanta • Birmingham • Boston • Chicago • Cleveland • Detroit • Houston • Kansas City (Mo.)

New Orleans • New York • Philadelphia • Pittsburgh • Salt Lake City

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Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY,

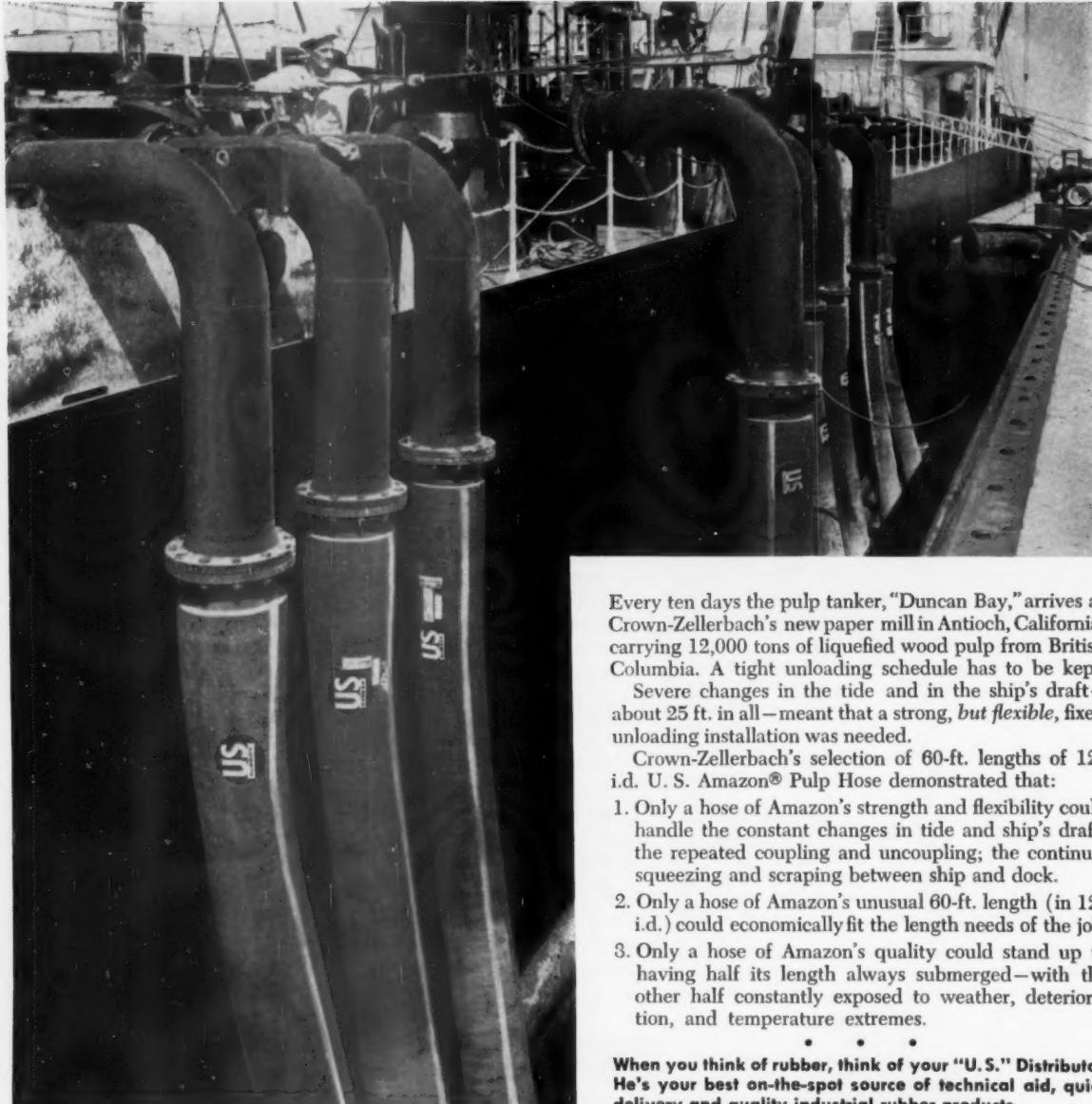
GREENVILLE, PA. and at NEW CASTLE, DELAWARE.

In Canada: HORTON STEEL WORKS LTD., TORONTO, ONTARIO



AMAZON HOSE

Controlling time and tide —with 60-foot lengths of hose



Every ten days the pulp tanker, "Duncan Bay," arrives at Crown-Zellerbach's new paper mill in Antioch, California, carrying 12,000 tons of liquefied wood pulp from British Columbia. A tight unloading schedule has to be kept.

Severe changes in the tide and in the ship's draft—about 25 ft. in all—meant that a strong, *but flexible*, fixed unloading installation was needed.

Crown-Zellerbach's selection of 60-ft. lengths of 12" i.d. U. S. Amazon® Pulp Hose demonstrated that:

1. Only a hose of Amazon's strength and flexibility could handle the constant changes in tide and ship's draft; the repeated coupling and uncoupling; the continual squeezing and scraping between ship and dock.
2. Only a hose of Amazon's unusual 60-ft. length (in 12" i.d.) could economically fit the length needs of the job.
3. Only a hose of Amazon's quality could stand up to having half its length always submerged—with the other half constantly exposed to weather, deterioration, and temperature extremes.

• • •
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UNITANE® Rutile Titanium Dioxides
are bringing coating performance up
to date.

For many years

... UNITANE O-110 has been highly effective in paper coatings to provide high opacity and whiteness. It is still the preferred titanium dioxide in casein-based systems.

Currently, for even greater opacity

... UNITANE OR-540 rutile titanium dioxide is finding wider application in publication stock and allied papers. As paper basis weights decrease, the unexcelled opacifying properties of this

rutile type become even more valuable as a practical, economical answer to paper-mill quality problems. In the newer latex and emulsion systems, UNITANE OR-540 is giving particularly excellent performance.

Any time you need whiter coatings

... you can enjoy the benefit of choosing from a wide range of UNITANE anatase or rutile titanium dioxide types. Samples for evaluation are always available from your Cyanamid Pigments representative — along with recommendations stemming from the work of Cyanamid's Paper Chemicals technical group.

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AMERICAN CYANAMID COMPANY
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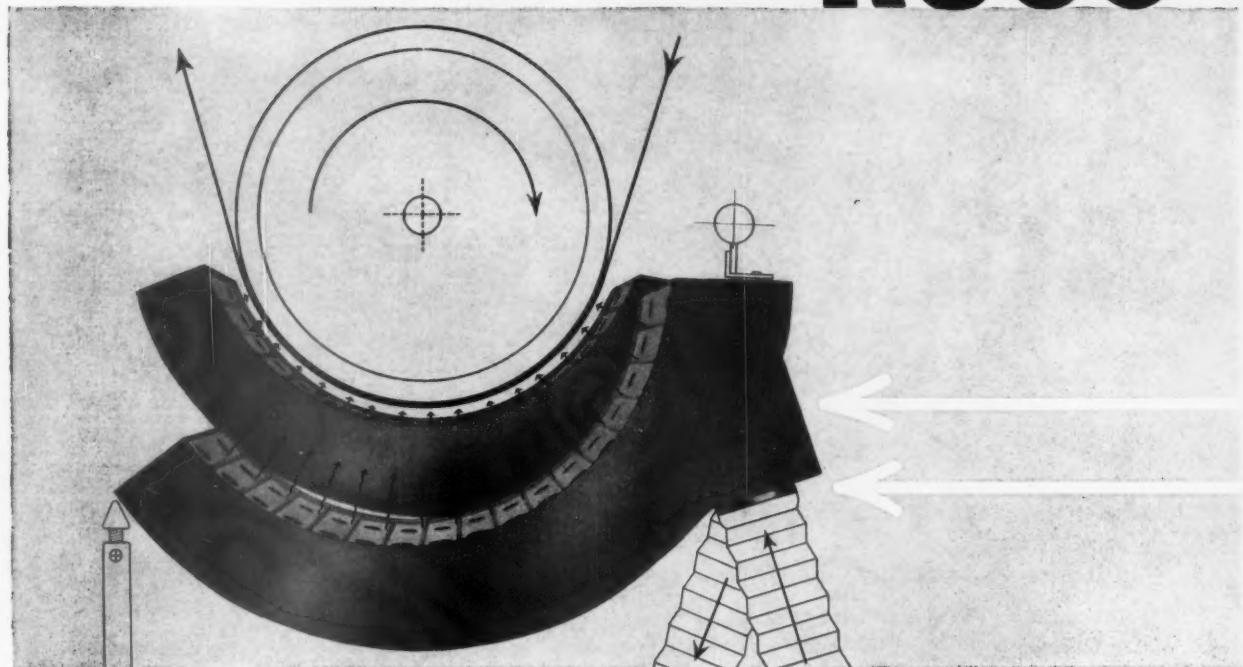
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Engineered Atmospheres
for Better Processing

ROSS



**Outstanding Features of the
* ROSS *S/P* HIGH VELOCITY DRYER:**

- increased machine production
- uniform drying across the entire width of the sheet
- zoned distribution with variable air velocities across the sheet
- flexibility in air distribution in that the volume can be controlled in each drying head
- flexibility of air impingement by variable distances between sheet and nozzles
- permits a very wide temperature range
- each zone head is completely mobile
- obtainable fully automatic with moisture indicating instruments triggering air flow dampers
- exceptionally compact
- each drying head can be easily inspected, removed and maintained individually.

* Patent Applied for

ENGINEERING

Ross Paper and Board
Dryer Specialists will
be in attendance dur-
ing Paper Week in
New York, the latter
part of February. Per-
haps you would like to
discuss a high velocity
drying project while
here in New York.

...with close to forty years of leadership
in the field of drying offers the

ROSS **S/P** HIGH VELOCITY DRYER

a radically new concept of drying already
on order that combines zoned and variable velocities,
volumes and impingements to assure

INCREASED PRODUCTION
UNIFORM DRYING
ACROSS THE SHEET

High velocity is a relative term. For many years Ross Engineers have been actively associated with high velocity drying, pioneering several major innovations in dryer designs.

Today with machine widths well up toward the 300 inch mark and with machine speeds already at 2,000 fpm and heading toward the 3,000 fpm mark, it is imperative that the air system be flexible enough to handle effectively the greater drying and tonnage problems involved. This calls for increased impingement and controlled distribution of air flow that can run up to 20,000 fpm. The Number 1 objective is to...

...dry the sheet uniformly across its entire width while holding
to the higher production schedules resulting from the
stepped-up machine speeds.

The Ross High Velocity Dryer is designed to increase and improve drying of pulp, paper, board and Yankee Machine...the above type shown being but one of several distinctly different high velocity designs. It is also applicable for both on and off machine coating, laminating and other converting operations.

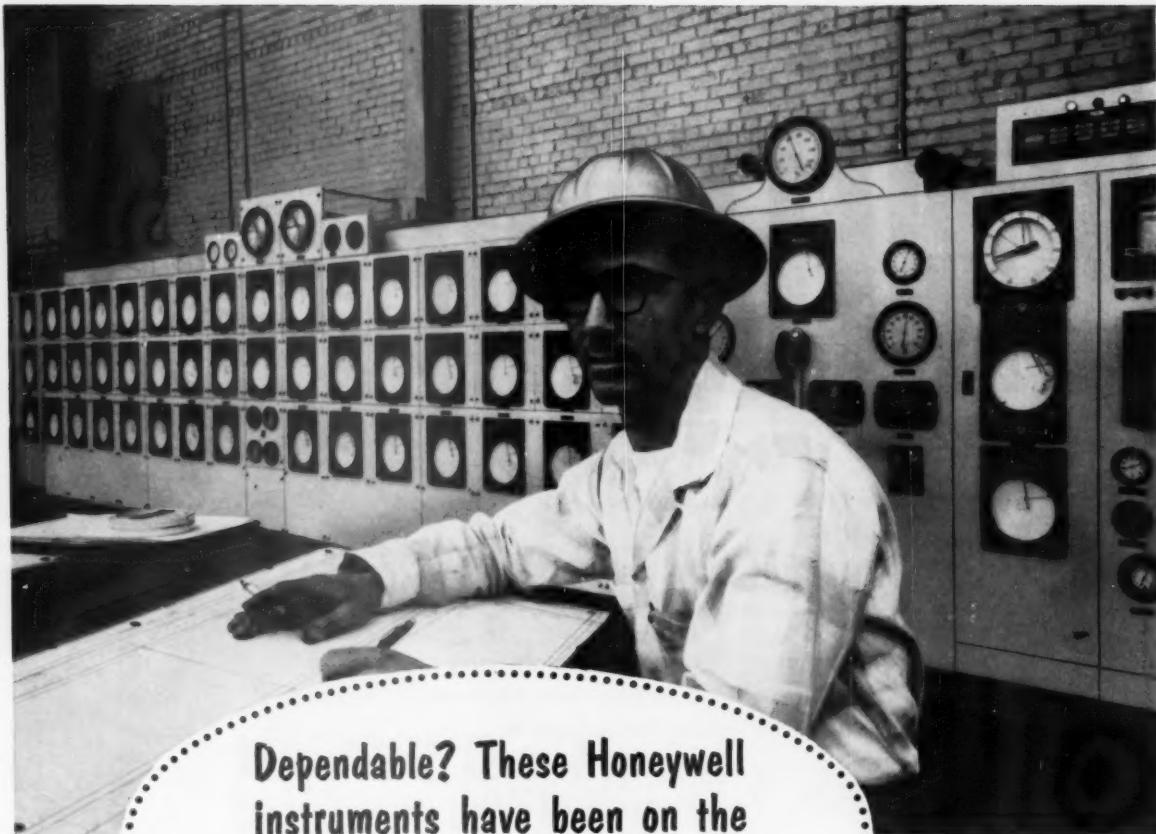


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Dependable? These Honeywell instruments have been on the job at North Carolina Pulp Co. for over 10 years!

In instruments, dependability is as important as accuracy. You can't gain the full advantage of automatic control without it.

The dependability you can expect of Honeywell instruments is well demonstrated at North Carolina Pulp Company, Plymouth, N.C. Here, many Honeywell instruments have been in operation since 1938, and are still going strong. In the turbine room shown above, some 54 Honeywell recorders, controllers, indicators and flow integrators average well over 10 years of accurate, reliable service, with minimum maintenance.

You can see other examples of the long-term dependability of Honeywell instruments in mills across the country. Profit by it in your own mill. Your Honeywell field engineer can show you how. Call him today. He's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

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First in Control

Master Key...



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LOW COST FUTURE**

**BITUMINOUS COALS
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Accessibility and increasingly efficient burning equipment mean economical, constant-cost for today and tomorrow.





PHOTO BY EWING GALLOWAY, N. Y.



HAM FELTZ says:

"Reminds me how HAMILTON Felts run water"

YOU CAN'T BEAT

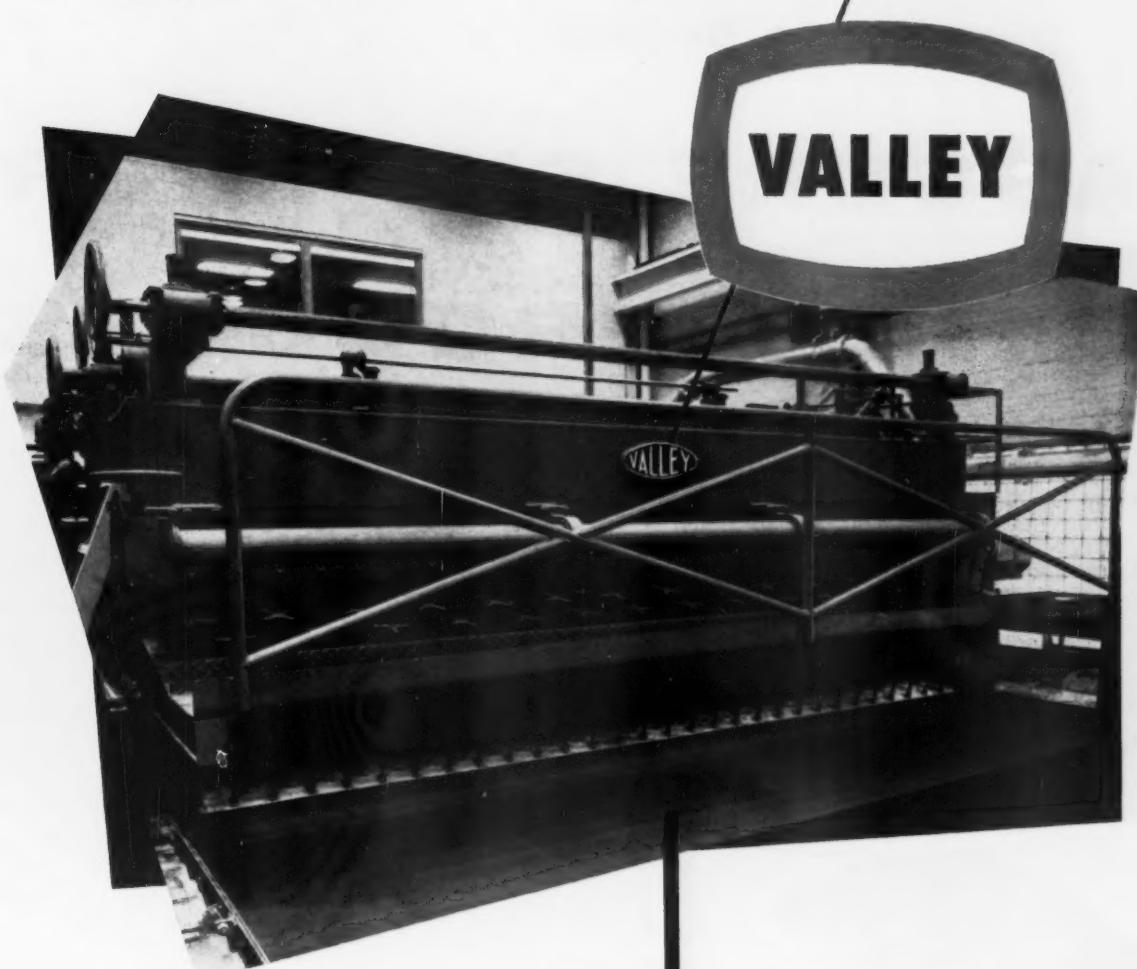
Hamilton
FELTS

Hamilton Felts run water like a sieve. They're "water-conditioned" for fast water removal so they deliver drier sheets to the drier, permit operators to run machines at higher speeds with fewer stops, less broke.

If this is the performance you'd like felts to give contact us—today!

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on Chillicothe Paper Company's
again *it's inlet and headbox by*



Says the mill: "This equipment
is of major assistance in
maintaining the high quality
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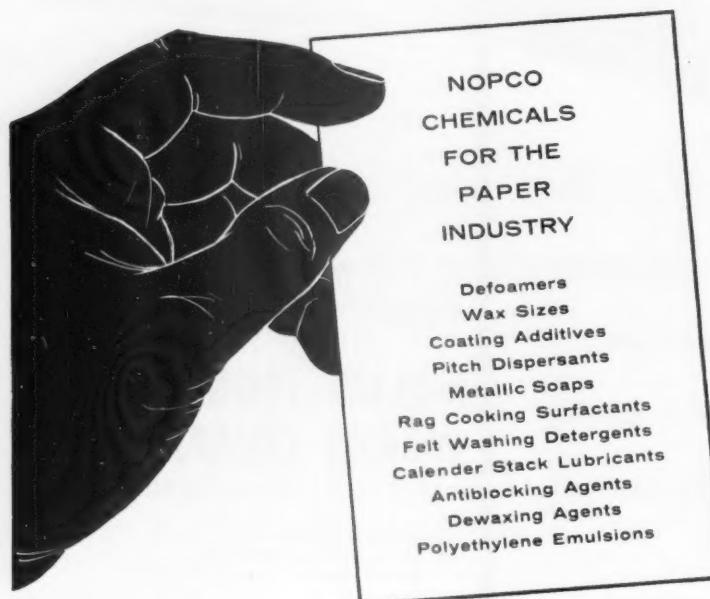
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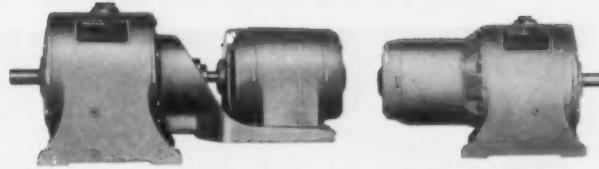


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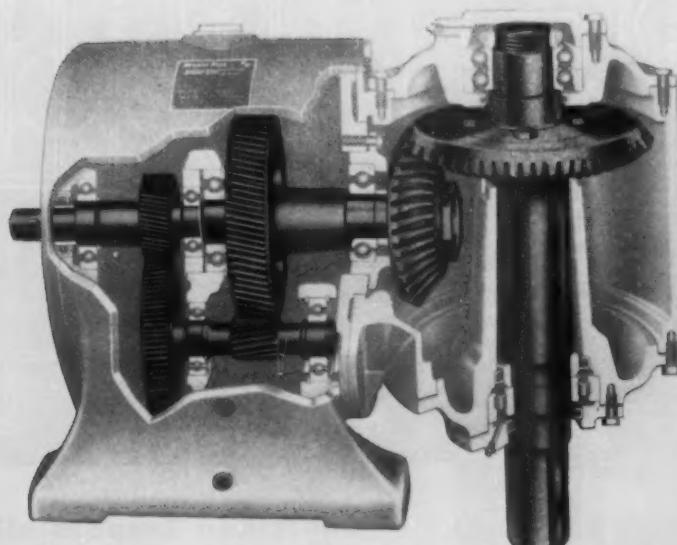
all-motor gearmotor

integral gearmotor

Built-in customer benefits, engineered to customer needs for more than 25 years, make the Western Gear StraitLine Speed Reducers line the finest in the field. The reducer and right angle head pictured below are available in ranges from 1 HP to 75 HP, with or without motor. Let our engineers consider your needs.

WESTERN GEAR

STRAITLINE speed reducers with universal-mounted right angle head!



UNIVERSAL MOUNTING. The right angle attachment may be furnished in horizontal, vertical or intermediate positions with single or double extended shafts.

SPIRAL BEVEL GEARING. Precision cut from alloy steel forgings and case hardened for maximum strength and durability. Each set of gears is matched and lapped after hardening to insure good contact and quiet operation.

DRY WELL CONSTRUCTION. Time tested dry well construction prevents oil leakage down the output shaft for vertical applications.

OVERHUNG LOAD. Conservatively selected bearings, husky output shaft, and wide bearing span provide ample overhung load capacity for chain, pinion and belt service.

POSITIVE LUBRICATION. A simple splash lubrication system, integral with the main housing, thoroughly lubricates gears and bearings. Case design allows oil to be circulated freely at all times.

LESS MAINTENANCE. Only two alemite fittings are required to lubricate bearings when output shaft is in the vertical position. Large grease reservoirs are provided to insure positive lubrication.

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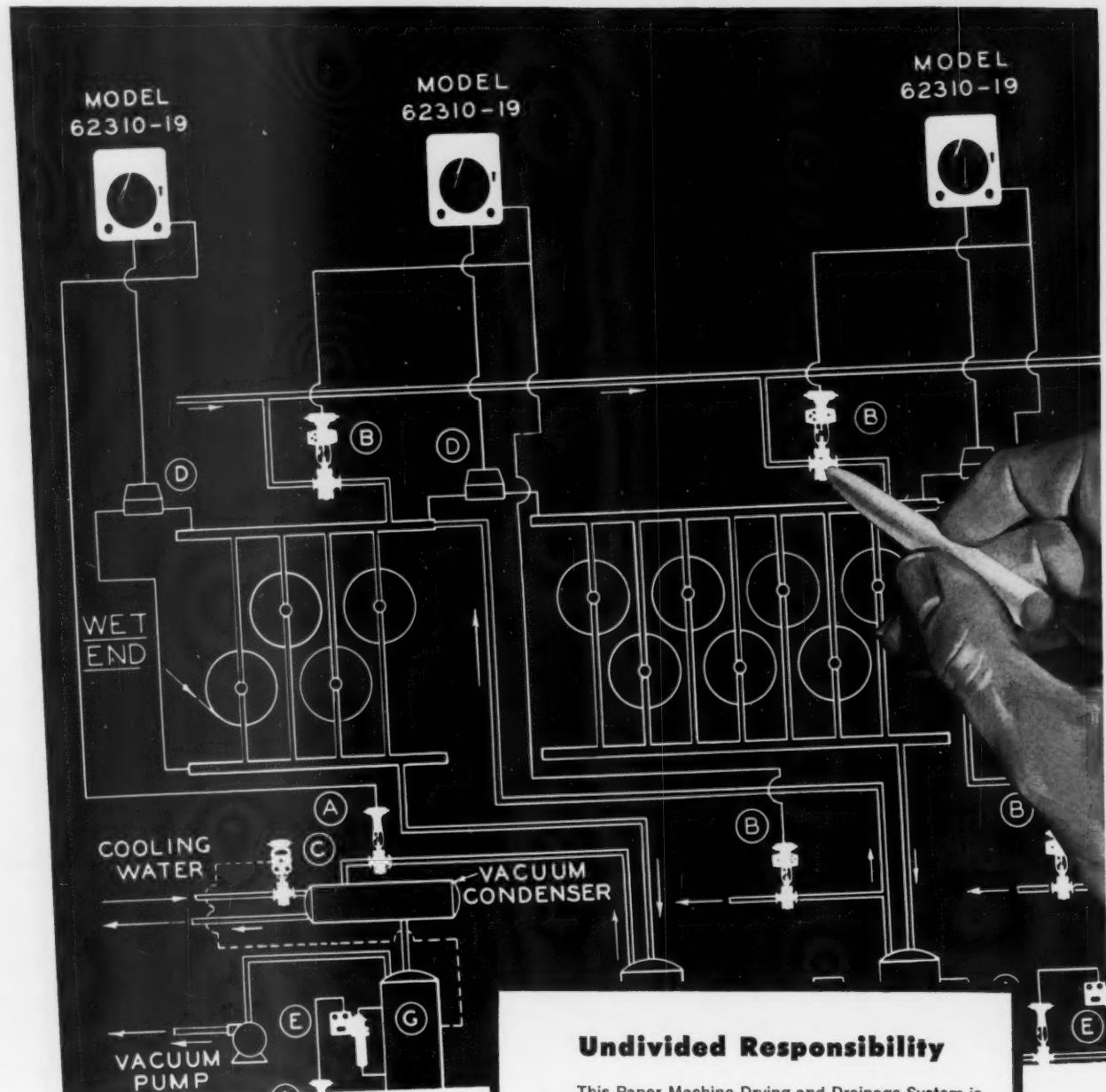
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Increase Machine Speed and Flexibility

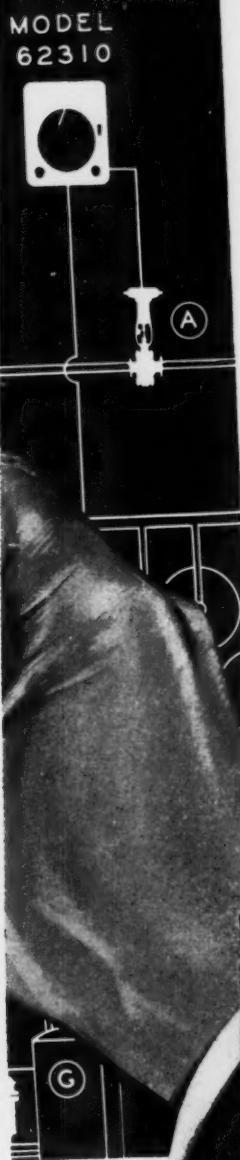


Undivided Responsibility

... This Paper Machine Drying and Drainage System is engineered as a complete package, combining all the required components into a proven, dependable system.

- Control Valves
- Control Instruments
- Level Controls
- Pressure Transmitters
- Pumps
- Separators
- Condensers
- Installation Supervision
- World-wide Service

with Masoneilan Drying-Drainage System



Improvement in heat transfer provides fully uniform sheet drying even at high machine speeds, plus extra bonus of steam economy.

Masoneilan Drying and Drainage Systems are designed to provide the optimum degree of heat transfer within the drier sections. Result: Complete flexibility in selection of machine speeds, more uniform sheet drying and increased over-all capacity.

The key to this efficiency is the continuous purging of both condensate and non-condensables, by maintaining adequate differential pressures across drier sections — assured by the Masoneilan Blow-Through

System. Drier sections are rapidly cleared of non-condensables during start-up; and excess steam is relieved during radiation loads. In addition, steam is more fully utilized by cascading from dry to wet end sections in each drier group.

Send for Special Bulletin on Paper Machine Drying and Drainage Systems. Make it your first step towards improving paper quality, increasing production and achieving new steam economies.

Send for it, today.

MASON-NEILAN

Division of Worthington Corporation

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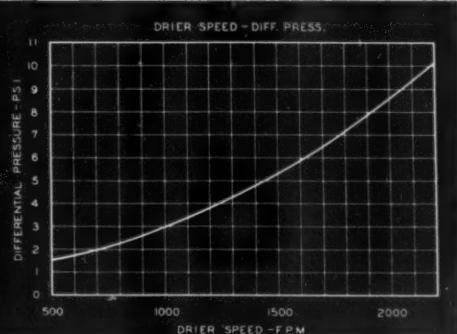


Fig. 1 indicates what minimum differential pressures are generally necessary to properly evacuate a 60" diameter drier. This is an empirical curve, but experience proves it reliable.

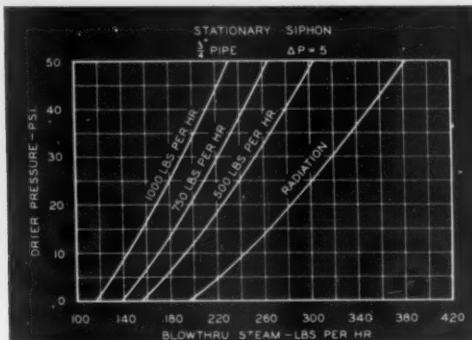
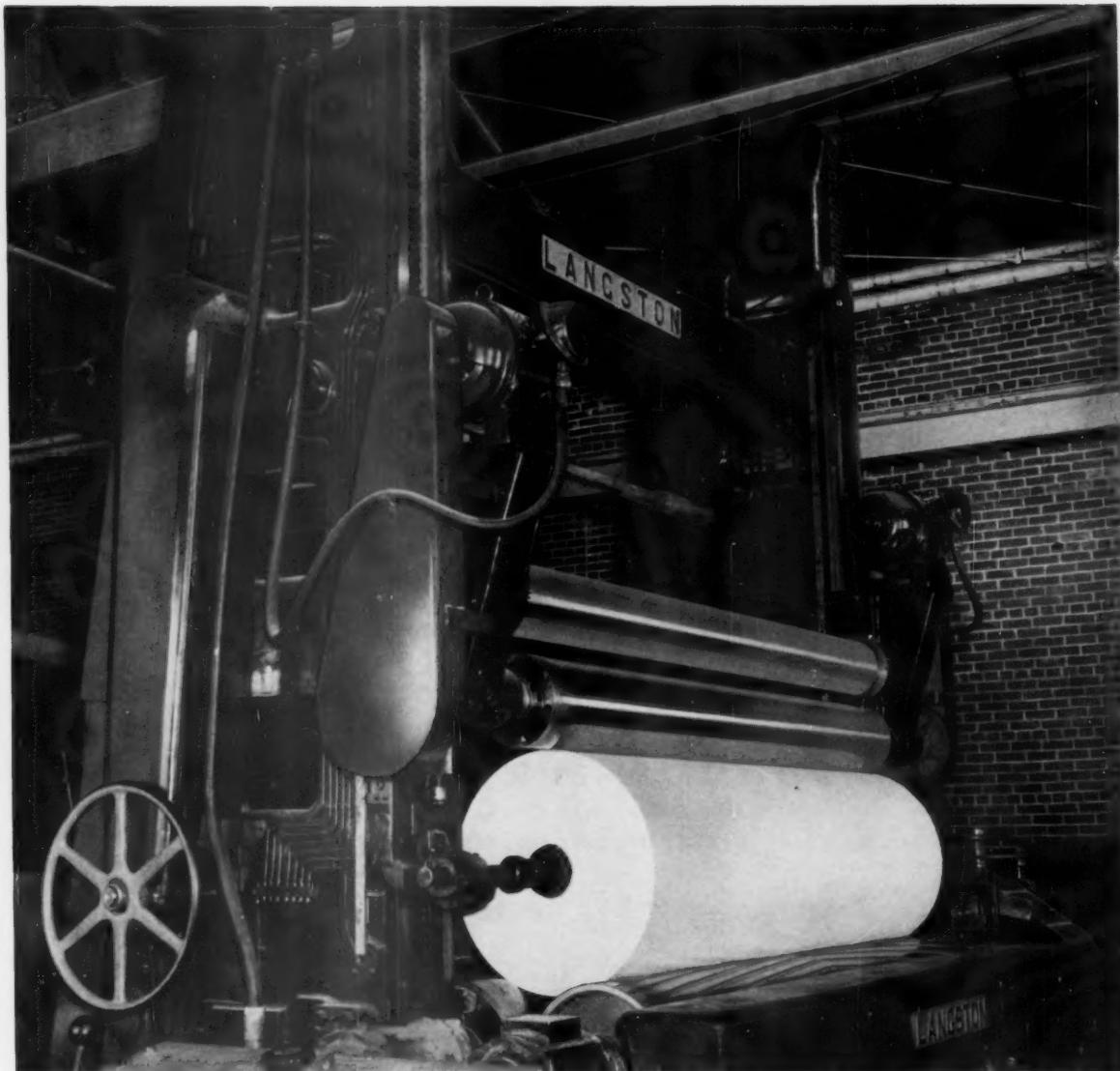


Fig. 2 shows the considerable difference in the quantity of blow-through steam when a drier is condensing and when under radiation load. These curves are also derived in an empirical manner.



Langston Slitter and Winder features precision roll density control

Here's a way for you to get uniform roll density from the core to the outside. This type "DH" Slitter and Winder features hydraulic rider roll control that automatically adds or subtracts rider roll weight.

This arrangement makes it possible to constantly maintain correct nip pressure to compensate for the changing diameter and weight of the rewound roll. A simple valve permits setting the correct rider roll

weight for various grades and basis weights of both paper and board.

Pushbuttons for raising and lowering the rider roll during threadup replace complicated chains, sprockets, and bulky counterweights, thus speeding up production by reducing setup time.

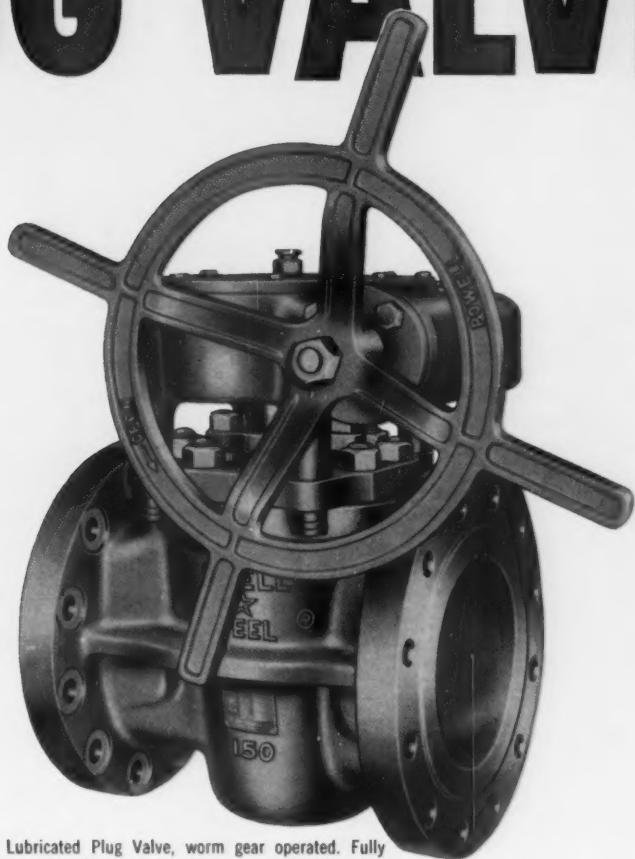
Learn more. Write SAMUEL M. LANGSTON CO., 6th & Jefferson Sts., Camden 4, N.J.



LANGSTON



POWELL LUBRICATED PLUG VALVES



Powell Lubricated Plug Valve, worm gear operated. Fully enclosed gear housing is a safety feature and protects against injuries and damage from the elements and tampering.

Like all Powell Valves, Powell Lubricated Plug Valves are superior in their field . . . and have many advantages over conventional types of Valves:

- Simple design: Only three basic parts—Body, Bonnet, Plug.
- Quick, complete shut-off.
- Tapered plug assures positive seating.
- Machined surfaces of plug and body are not exposed in open position.
- Cavity-free straight passage assures streamlined flow.

Powell Lubricated Plug Valves are available in sizes $\frac{1}{2}$ " through 16", depending on the type required—Semi-steel 175 and 200 pounds WOG; Carbon Steel ASA 150 and 300 pounds. Powell can also furnish Lubricated Plug Valves in other alloys on special order.

For all your valve needs, consult your local Powell Distributor—or write directly to us. Send for our new Lubricated Plug Valve Catalog, Number PV-5.

The Wm. Powell Company • Cincinnati 22, Ohio
Dependable Valves Since 1846

POWELL...world's largest family of valves

COATING & FILLER CLAYS

with natural viscosity control

OFFERED BY

THEILE

Closely controlled in quality, with viscosity control provided by Nature, carefully blended Thiele Paper Clays are uniform throughout one or a dozen separate shipments.

Extensive mining facilities—in the heart of Georgia's famous clay belt—plus the most modern of refining, spray drying, and storage facilities—GIVE ASSURANCE OF A MOST DEPENDABLE SOURCE OF SUPPLY.

Thiele Clays are unmatched for:

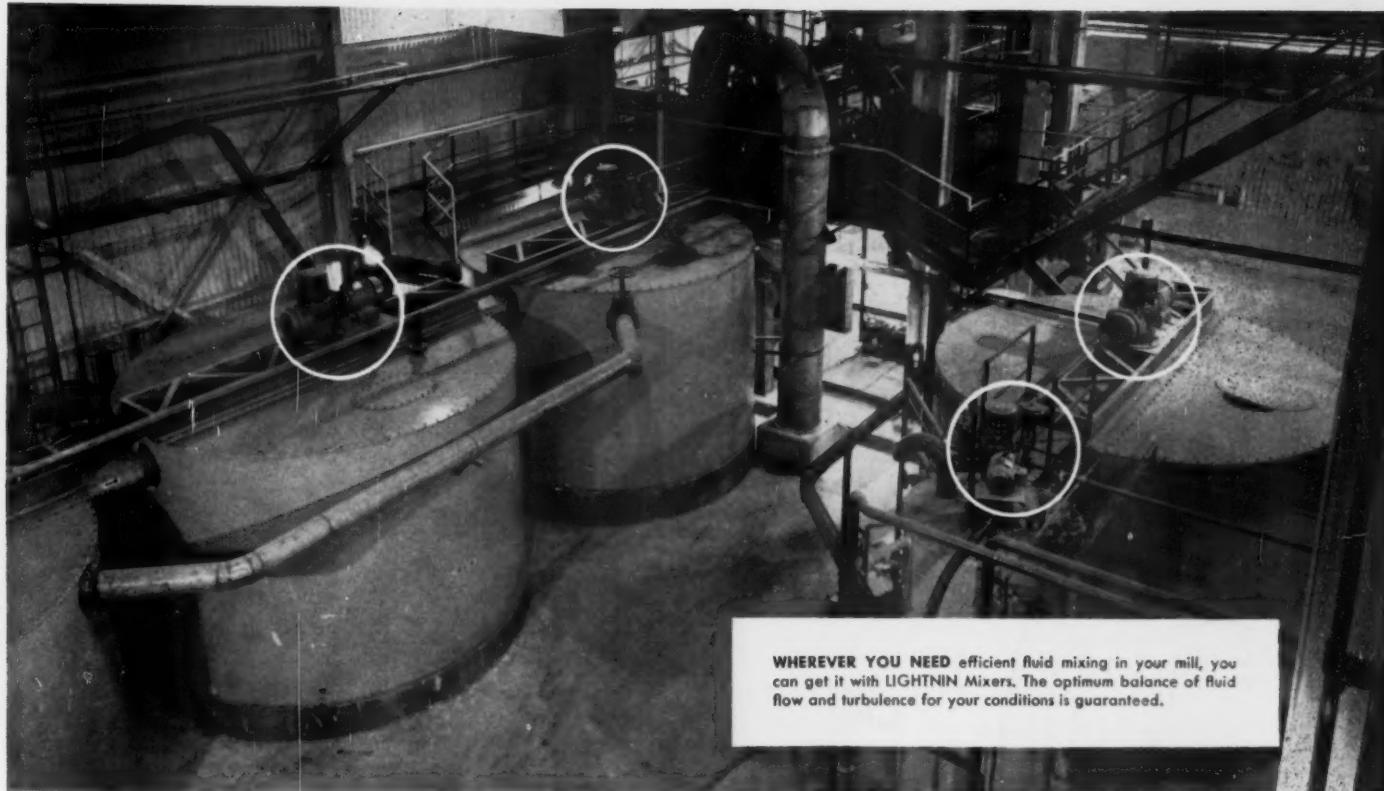
CONTROLLED PARTICLE SIZE • UNIFORM LOW VISCOSITY
EXCELLENT COLOR • HIGH BRIGHTNESS.



Viscosity testing
at Thiele laboratory

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WHEREVER YOU NEED efficient fluid mixing in your mill, you can get it with LIGHTNIN Mixers. The optimum balance of fluid flow and turbulence for your conditions is guaranteed.

Why you can't afford to be complacent about mixing

Time was when you could afford to be satisfied with just-average mixing in a tank or chest.

No more.

Not when you can get equipment that will blend three tons of 3½% ground-wood and sulfite stocks to complete uniformity in 10 minutes.

Not when you can keep 3,000 sticky gallons of starch moving while it cooks right up to the bursting point; then hold it uniform until you're ready to use it.

Not when starch, color, and coatings must be prepared in a highly automated system, serving five paper machines with 250 tons daily output.

Not when you'd like to adjust the color of 4% stock in a beater chest or machine chest—in one minute flat.

How you can get results you want
Today's fluid mixing requires a technology that can accurately, predictably

equate mixer design and horsepower with the exact results you want.

You get this technology when you specify LIGHTNIN Mixers for your chests and tanks.

You get the precise power level you need to accomplish the job you want done in a given chest or tank, within a given time.

Correct power for your mixing operation is chosen scientifically from hun-

dreds of available power-speed combinations ranging up to 500 HP. Selection is based on unique data derived from many thousands of pilot runs, plus successful installations in more than 50 mills. Results are guaranteed.

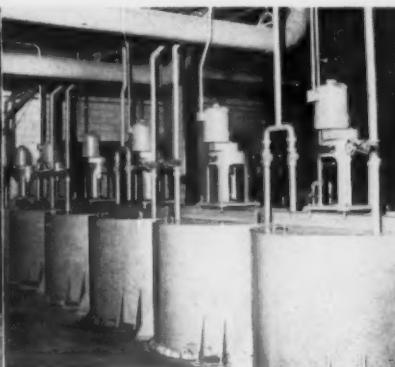
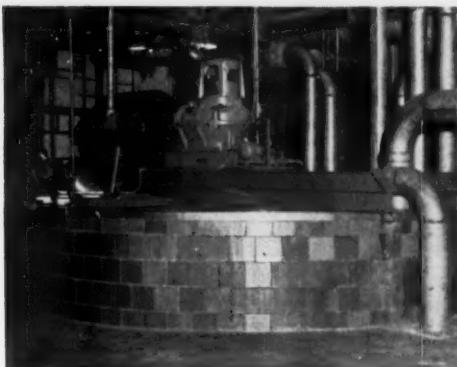
For quick, competent help on mixing that does what you want it to do, call your LIGHTNIN representative (listed in Thomas' Register and Pulp & Paper Mill Catalog). Or write us today.

Lightnin® Mixers

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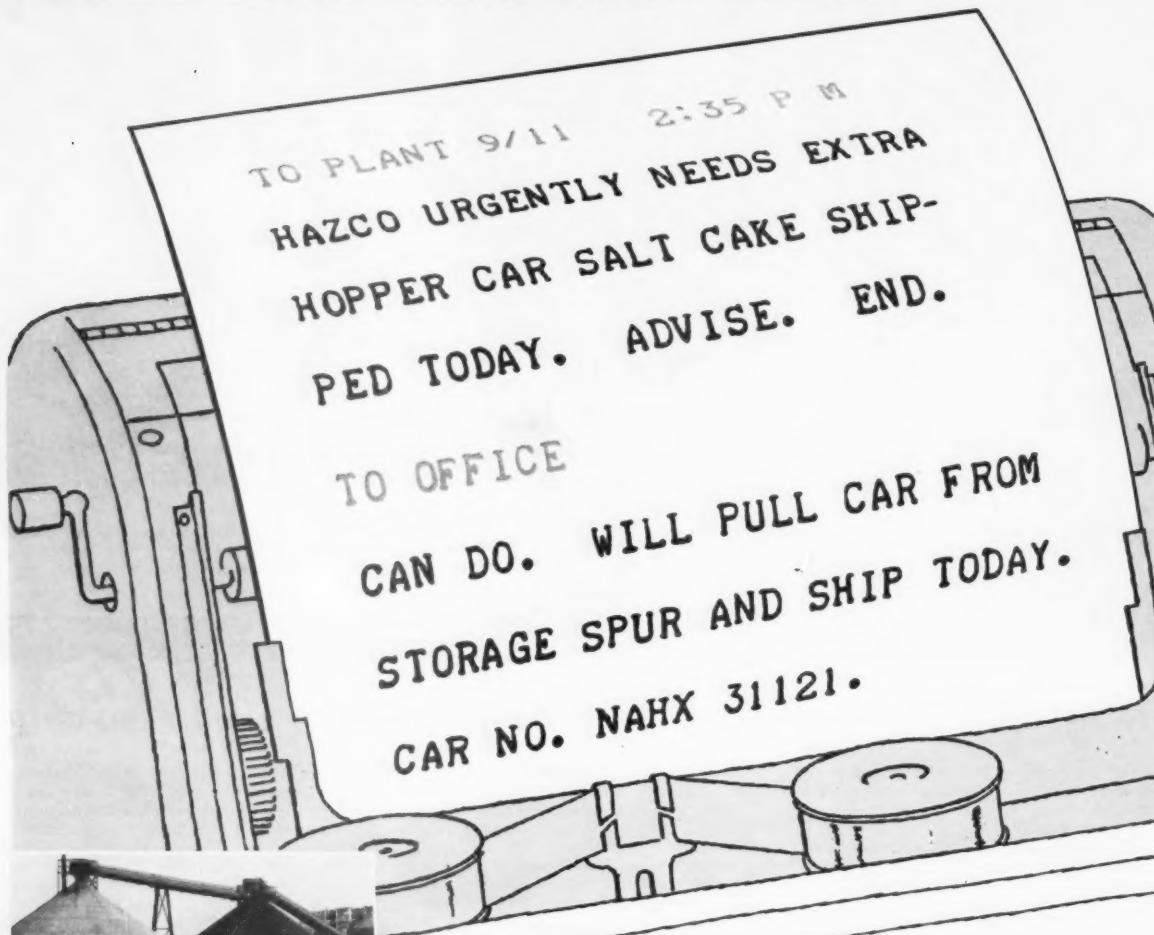


SMOOTH OUT fluctuations in stock consistency with LIGHTNINs in your stock chests. LIGHTNIN Mixers are being used successfully on stock consistencies up to 6% and in chests as large as 48 feet diameter by 50 feet high.

GET UNIFORM COLOR rapidly with propeller-type LIGHTNINs. This battery, installed in 100-inch-deep stainless steel tanks, prepares liquid color for five paper machines. For details on these LIGHTNIN models, request Catalog B-103.

MIX COATINGS to high degree of uniformity in unbaffled tanks with LIGHTNIN Portable Mixers. Thirty standard models to choose from; electric or air motors, direct or gear drive. Sizes $\frac{1}{6}$ to 3 HP. Fully described in Catalog B-108.

West End "fills the order"...



Meeting service requirements to the letter and producing superior salt cake of consistent chemical analysis are the essentials to which the West End organization is uniquely geared. A system of rapid communications linking our sales office in Oakland with our production, technical and shipping departments at the desert plant site permits each department head to have a complete understanding of the customer's individual requirements and to make firm commitments or provide the desired information promptly.



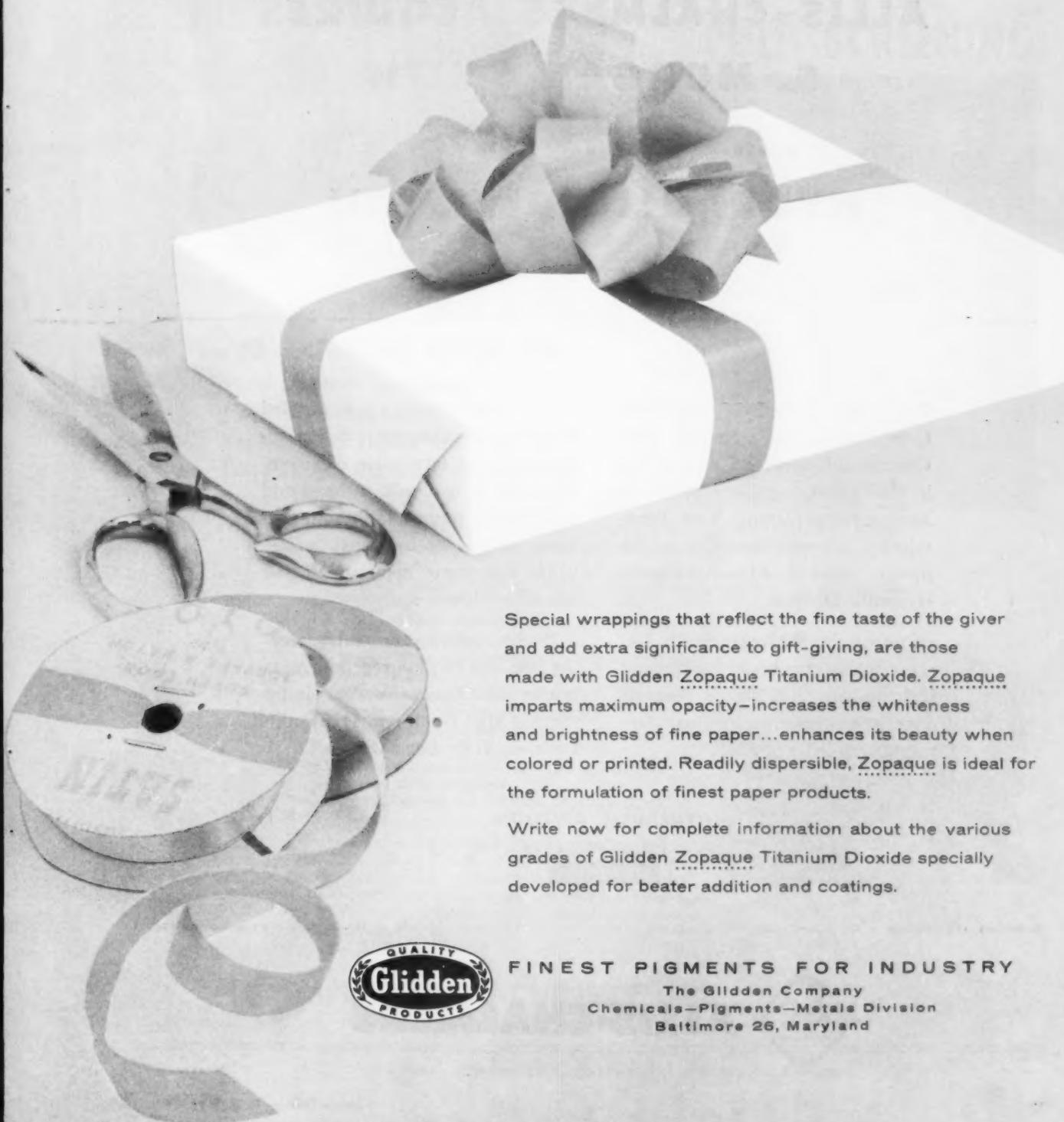
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DIVISION OF  STAUFFER CHEMICAL COMPANY

FINEST GIFT WRAPPINGS...

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Special wrappings that reflect the fine taste of the giver and add extra significance to gift-giving, are those made with Glidden Zopaque Titanium Dioxide. Zopaque imparts maximum opacity—increases the whiteness and brightness of fine paper...enhances its beauty when colored or printed. Readily dispersible, Zopaque is ideal for the formulation of finest paper products.

Write now for complete information about the various grades of Glidden Zopaque Titanium Dioxide specially developed for beater addition and coatings.



FINEST PIGMENTS FOR INDUSTRY

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Baltimore 26, Maryland

ALLIS-CHALMERS ACQUIRES S. MORGAN SMITH ... FORMS NEW HYDRAULIC DIVISION

On February 1, the S. Morgan Smith Company became a part of Allis-Chalmers. Extensive A-C facilities in Milwaukee, together with two S. Morgan Smith plants in York, Pennsylvania, are now operating as the newly created Allis-Chalmers Hydraulic Division.

In acquiring S. Morgan Smith, A-C combines its own broad background in hydraulics with the 80 years of diversified engineering and manufacturing knowledge of SMS.

The York facilities will be devoted to the continued research, design, engineering and fabrication of a complete line of hydraulic turbines and accessories, pumps and pump-turbines, valves for industrial, waterworks and power applications, and specialized heavy equipment.

Product information or engineering help can be obtained from your nearby Allis-Chalmers office, or by writing Allis-Chalmers, Hydraulic Division, York, Pennsylvania.

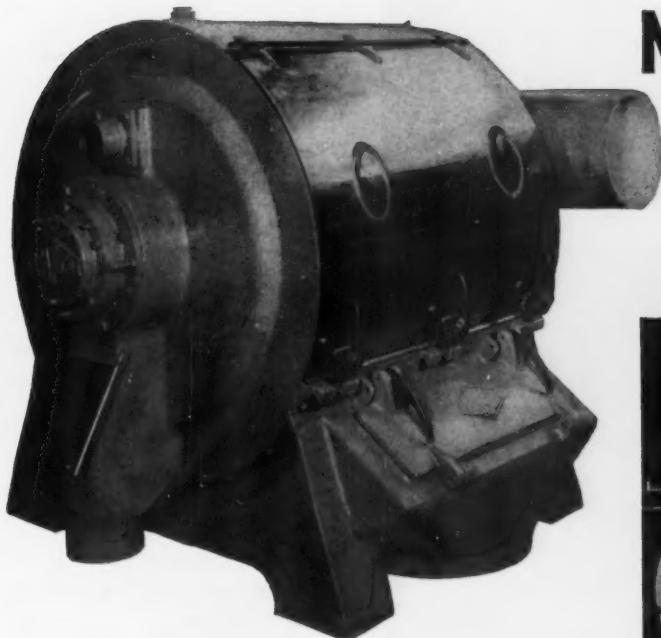
HYDRAULIC DIVISION



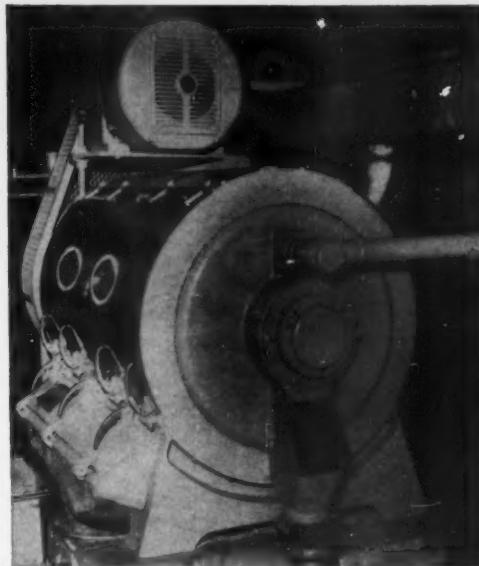
Rotovalves • Ball Valves • R-S Butterfly Valves • Free-Discharge Valves • Liquid Heaters • Pumps • Hydraulic Turbines & Accessories



ALLIS-CHALMERS



NEW ADVANCES IN LOW COST QUALITY PULP SCREENING



IMPCO CENTRIFUGAL SCREENS FOR:

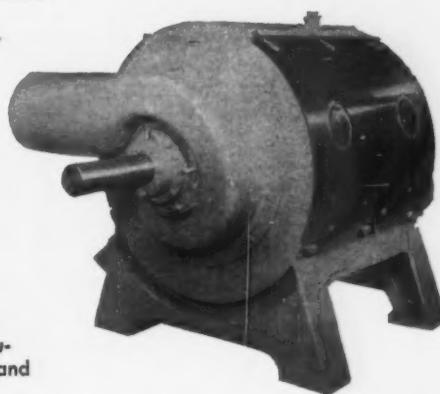
- Washed Stock Screening
- Hot Stock Screening
- Sealed Black Liquor Knotting
- Fibre Length Classification
- Paper Stock Cleaning

The new Impco Centrifugal Pulp Screen is the latest example of the progress made toward the ultimate in low cost quality screening. This screen incorporates many improved principles and features such as:

- a stock inlet allowing direct top, bottom, front or rear infeeding which simplifies installation piping;
- a tangential inlet which changes flow direction from linear to rotating, yet retains velocity head;
- a special stator which provides uniform internal distribution of pulp;
- a patented high-efficiency rotor which increases capacity without additional horsepower;*
- a bottom accepted stock outlet permitting all sub-floor piping;
- a full length quick-opening door for routine accepted stock sampling;
- an accessible rejects outlet for tailings inspection or sampling.

These features are resulting in peak capacities and high discharge consistencies at lowest horsepower. Reject richness is readily controlled. Engineered simplicity is characteristic of the entire line of Impco Centrifugal Screens which require very little operating attention and mechanical maintenance.

* U. S. Patent No. 2,845,848.



IMPROVED MACHINERY INC.
NASHUA, NEW HAMPSHIRE



In Canada, Sherbrooke Machineries Ltd., Sherbrooke, Quebec



**No wonder—
they're
Lodding
Doctors!**

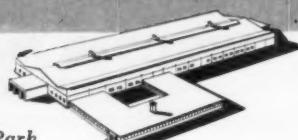
DRYER ROLLS at the Chillicothe Paper Company run clean — free of the insulation that baked-on fibers create. This contributes to operating efficiency in the dryer section, resulting in high quality, economical, safe production. Lodding Doctors are largely responsible. Other rolls at Chillicothe run clean, too, and for the same reason.

Whether for the dryers or any other rolls from the Fourdrinier to the reel, Lodding Doctors contribute to operating efficiency by helping to keep rolls clean and preventing wraps.

You can depend upon this kind of performance with Lodding Doctors, because each is custom engineered for the specific roll on which it is to be installed and is made by specialists according to the highest standards of precision craftsmanship. This is why Lodding Doctors are guaranteed to give satisfactory performance.

For the assurance of maximum doctoring efficiency on your machine rolls, specify Lodding Doctors.

LODDING
Engineering Corporation
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*... helps meet high production standards in
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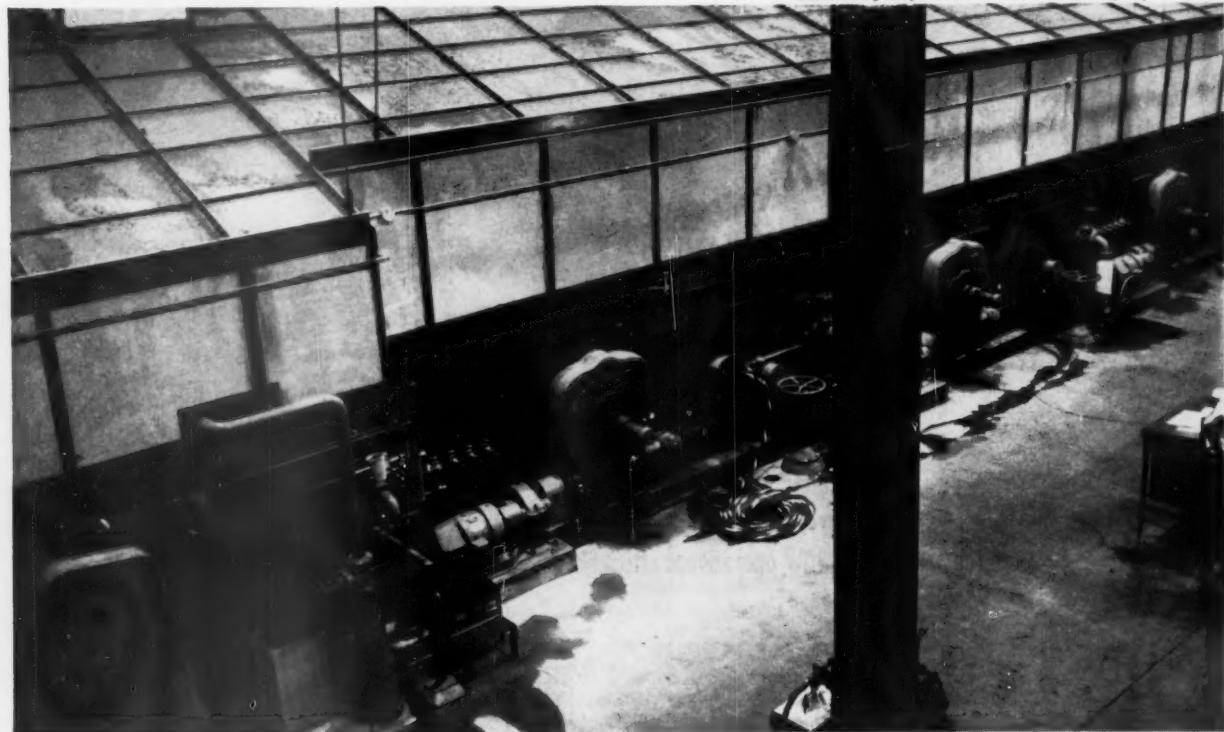
Built to utilize wood waste resulting from extensive lumber and plywood operations, Georgia-Pacific's new kraft mill at Toledo, Oregon, is a logical development of the company's policy of diversification and maximum use of its forest resources.

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OLIVER® BROWNSTOCK

WASHING SYSTEM A 4-stage 11'6" diam. x 14' face 55F9 Oliver Brownstock Washing System is used by Georgia-Pacific to insure thorough removal of dissolved solids and efficient black liquor recovery. Total washing losses as salt cake average ten to twelve pounds per ton when running 400 tons per day.

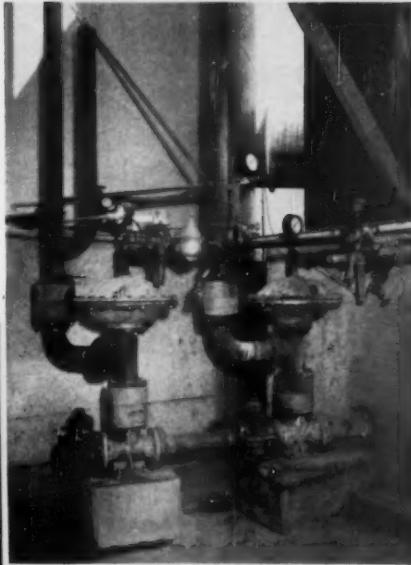


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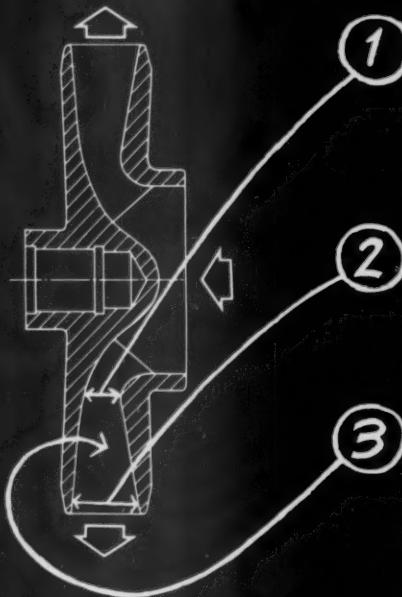
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Here's how the revolutionary new I-R Stock Pump works

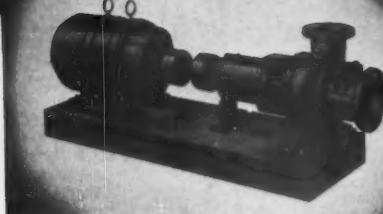
NON VAPOR-BINDING
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1 Impeller width at center is smaller than at periphery...

2 Hence there is a greater area at the discharge than at the inlet

3 So the material pumped can't enter fast enough to replace the ejected liquid, and vacuum space is formed between the blades



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230 Park Avenue, New York 17, N. Y.

New Recovery Process

Clears way for further expansion in semi-chemical pulp industry without stream pollution problem or capacity limitation

By L. J. SCHEID
Watervliet Paper Co.

and R. CAREAGA
Babcock & Wilcox Co.

• Successful operation of the first commercial installation of a Mead neutral sulfite semi-chemical recovery process at Watervliet Paper Co. has opened new horizons for NSSC pulping. It has proved that the NSSC pulping process can be economically carried out without stream pollution or capacity limitations resulting from integration with kraft cooking.

The process was originally developed by The Mead Corp. and piloted at its Sylva, N.C. mill.* When the pilot plant indicated that the process was economically feasible, Watervliet decided to be first to erect a full mill-size installation (50 tons per day NSSC pulp) at its Watervliet, Mich., mill. The second such installation, sized for 250 tons of unbleached corrugating medium production, is currently operating at Mead's Heald div. in Lynchburg, Va.

Process and Equipment

Watervliet is engaged in the production of bleached NSSC pulp for use in coated papers. The cycle employed consists of cooking aspen chips in rotary digesters and passing them

THE REPORT THIS INDUSTRY HAS BEEN WAITING FOR—the first successful commercial installation of the Mead NSSC recovery system.

An exclusive report, especially prepared for PULP & PAPER, this article is fully copyrighted.

Results reported here may have a far-reaching effect in many populated areas where—until now—it was thought no pulp mills could exist.

first through an Anderson extractor and then an expeller, from which the pressed chips are fed into a refiner to give unbleached NSSC pulp. The blowdown liquor from the digester is combined with the liquor from the extractor and evaporated from 10-12% to 33% solids in a triple-effect, forced-circulation Swenson evaporator.

The strong black liquor is fed into a venturi scrubber evaporator, where it serves as a scrubbing medium for removing salt cake from the furnace gases, and is further evaporated to 65% solids. The high thermal absorption in the venturi (a gas temperature differential of 900° F) allows for low inlet solids liquor from a smaller bank of evaporators at a lower initial cost. After going through the venturi, the liquor is burned in a Babcock & Wilcox Co. kraft furnace of conventional type, except that the boiler bank and heat traps have been omitted.

The ability of a venturi type scrubber to handle 1,100° F gas without fire hazard permits the use of a smelter type unit. Although producing less steam, this unit burns the small (3,100

lb. solids per hour) quantities of liquor more economically, since a venturi used in this manner eliminates the need for expensive boiler bank and heat trap surface (along with surface cleaning costs) and, at the same time, serves as an evaporator and chemical recovery device.

The smelt from the furnace is dissolved in a conventional kraft dissolving tank, the concentration of the liquor being held between five and six Normal, and then put through a single-compartment Dorr-Oliver clarifier with the accompanying dregs washer supplying weak wash for the dissolving tank. Thus, the process is the same as in Kraft recovery through the operation of making green liquor. From this point on the novel features of the Mead system are employed.

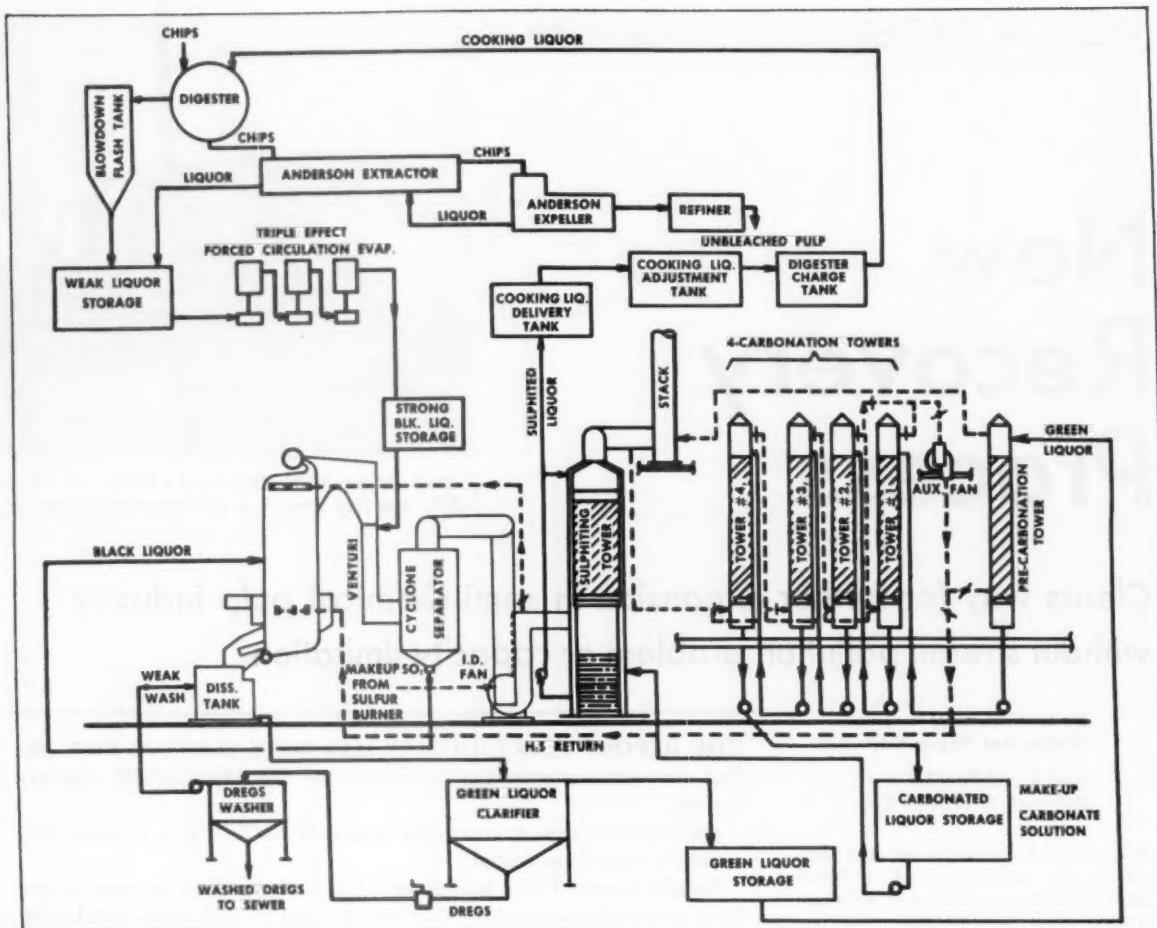
Chemical Recovery and Makeup

The clarified green liquor is fed from a storage tank to the pre-carbonation tower, where it comes in contact with approximately 20% of the gas flow used in the carbonation system. All of the H₂S in this gas and also



FIRST MILL-SIZE INSTALLATION of Mead NSSC recovery process is at Watervliet Paper Co.

*The Mead Recovery Process, J. Campbell, Babcock & Wilcox Co., and P. E. Schick, The Mead Corp. Presented at the Alkaline Pulping Conference of TAPPI, Nov. 5, 1956.



SCHEMATIC DIAGRAM OF PULP MILL OPERATIONS at Watervliet Paper Co.

most of the CO_2 is absorbed by the green liquor, and the clean gas is then discharged to the stack. The remainder of the carbonation system gas is forced to the furnace to burn the H_2S and recover the sulfur. This gas contains the maximum (approximately 4%) concentration of H_2S .

The pre-carbonated liquor is then sent countercurrent through the carbonation towers, where it reacts with the CO_2 from the flue gas to form sodium carbonate and some bicarbonate. This carbonated liquor is then stored. The storage tank allows for out-of-phase operation of towers and furnace. Makeup sodium is introduced here by batches of soda ash solution from a separate mixing tank.

The liquor is then fed into a sulfiting tower that scrubs the SO_2 (approximately 0.8%) from the furnace flue gas. Makeup sulfur is introduced in the form of SO_2 from a sulfur burner at the induced-draft fan inlet. The sulfited liquor from the tower is collected in the cooking liquor delivery tank, from which it is pumped in batches to

the cooking liquor adjustment tank for any necessary adjustments before being sent to the digesters.

Operation and Controls

The recovery efficiency of this system has been about 91% for sodium and 78% for sulfur, calculated on the basis of chemical from the pulp mill returned as cooking liquor.

Higher recovery would be expected in a larger installation, where any spillage losses would be smaller compared with production. (At Watervliet 1 gpm of spillage can cause a chemical loss of 10 to 12%. Week-end outages are another major factor in lowering efficiencies.)

The entire recovery plant is run by two men, an operator in charge and a helper. The helper is primarily concerned with furnace operation, while the operator personally handles the evaporators and tower system.

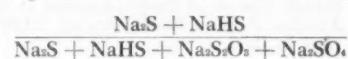
Black liquor solids both from the evaporators and to the furnace are continuously checked by use of Bausch & Lomb Optical hand refrac-

tometers. These instruments give an instant reading of solids and have been found extremely helpful, especially since the direct-contact evaporator on this unit takes the liquor from 33 to 65% solids, and a deviation of 1% solids from the evaporators can cause a difference of over 4% in firing solids.

It was originally hoped that the black liquor would burn readily with no auxiliary fuel required. Although it is possible to burn the liquor in this manner, at Watervliet—with the cooling effect of the small furnace in addition to the tempering effect of the cold (180° F) H_2S -laden gas—it was found a small quantity of auxiliary fuel oil more than pays for itself in maintaining stable furnace conditions.

Green Liquor Differs from Kraft

Green liquor is maintained at a specific gravity of 1.23 and analyzed daily for Na_2S , NaHS , $\text{Na}_2\text{S}_2\text{O}_3$ and Na_2SO_4 . The "reduction" is defined by



all expressed in gm Na per liter in order to give a clearer picture than the usual reduction analysis would give. This "reduction" figure actually indicates what percentage of the sodium is tied up with active sulfur compounds to be processed, whereas the quick analysis usually employed does not consider the thiosulfate present as inert.

Watervliet's green liquor differs from kraft primarily in regard to sulfidity and reduction. (See table on typical liquor compositions). The reduction in burning NSSC liquor is inherently lower than that of kraft since the lower heating value of the fuel results in a cooler furnace. In a small furnace the added cooling effect of the walls further depresses the furnace temperature with resulting low reduction.

The CO_2 content of the gas (15 to 16% entering the carbonation system is recorded by a Ranarex (Permutit) continuous gas analyzer and maintained by controlling furnace excess air with a Fyrite oxygen analyzer. The furnace is kept at 15% excess air to assure complete combustion of both liquor and returned H_2S -laden gas from the carbonation system. Running with balanced air or a deficiency causes unburned H_2S to leave the furnace and results in sulfur losses besides causing odors in the vicinity.

Gas Flow Control

As pointed out above, the gas flow to the carbonation system is split between the pre-carbonation tower and the furnace. As much gas is fed to the pre-carbonation tower as will go through it without having any H_2S leave the tower. The amount of gas is controlled by constantly bubbling the exit gas through a lead acetate solution and periodically checking intermediate gas samples from the tower with lead acetate paper to assure presence of H_2S .

The quality of the carbonated liquor produced is tested by the operators on a go-no go basis to assure that the residual NaHS does not go over 2% of the total Na in the liquor.

TYPICAL LIQUOR COMPOSITIONS

Black Liquor to Furnace—65% Solids
Heating Value—5000 Btu/lb Solids

Process Liquors, expressed as per cent of total sodium

Component	Green	Carbonated	Cooking
Na_2CO_3	39.0	73.0	21.0
NaHCO_3		9.0	
Na_2S	42.0		
NaHS	3.0	2.0	
$\text{Na}_2\text{S}_2\text{O}_3$	5.0	5.0	6.0
Na_2SO_3			64.0
Na_2SO_4	11.0	11.0	9.0
	100.0	100.0	100.0
Sp. Gravity	1.23	1.24	1.15

This is done by pipetting a 1-ml. sample of liquor into a measured quantity of acidified iodine solution and using starch as an indicator. Since the thiosulfate level is assured constant by green liquor analysis, this test gives the operator a quick indication as to whether action must be taken to improve system performance. If desired, he can find out how close to the border the operation is by using a back titration with thiosulfate.

The degree of sulfitation in the sulfiting tower is controlled by pH. It has been found that by keeping the pH between 8.2 and 8.3 the sulfited liquor is proportioned almost exactly between Na_2SO_3 and Na_2CO_3 as is desired for cooking. This serves to cut down on adjustment necessary before sending the liquor to the digesters.

Cooking liquor is made by weighing out enough for each charge in the digester charge tank, which is equipped with a strain gage, and then diluting it in the cook room before charging the digesters.

Problems and Changes

Several changes in operation have been made from that anticipated. Previously, the classical six-to-one Na_2SO_3 to Na_2CO_3 ratio was used in cooking. With recovered liquor it has been found that more buffer is necessary, the amount of carbonate per pound of Na_2SO_3 being approximately double. The amount of sulfite necessary to cook has decreased slightly.

Safety considerations were paramount in designing and setting up the system's operation because of the high toxicity of H_2S being handled. An example of what may have been overemphasis on safety is the flame arrestor at first installed in the H_2S return line to the furnace. The arrestor plugged and caused frequent interruptions in operation. Since then, experience has proved this piece of equipment unnecessary, and it has been removed. The H_2S concentrations involved completely eliminate the possibility of approaching an explosive mixture.

During initial start-up, black liquor handling proved to be a problem. Whenever the liquor was stored in a tank, a gummy, sulfonated lignin precipitate formed and caused pluggage in black liquor lines throughout the system. The solution was simply to keep the liquor in constant motion by installing agitators in all tanks.

Originally it was planned to send approximately one-third of the total carbonation system gas to the pre-carbonation tower, but present operation now only sends about one-fifth. In order to get better carbonation without adding additional packing, the total

carbonation system gas flow has been increased, which accounts for this change in the proportion scrubbed.

Odor Abatement

As with all pulping processes, odor has been somewhat of a problem at Watervliet. The majority of complaints have been traced to operational imbalance during a program of planned adjustments in operating conditions.

The odor has been decreased considerably by closer control of start-up and shutdown procedures and close regulation of the excess air in the furnace. The H_2S content of the stack gasses is analyzed by use of an AISI hydrogen sulfide analyzer.

It has been found that when H_2S concentrations in the flue gas are held below 0.01% there are no objections.

Continued on next page.



Bahrenburg



Scheid

Some Watervliet History

Watervliet Paper Co., Watervliet, Mich., was merged into Hammermill Paper Co., about a year ago, at which time its former president, George K. Ferguson, retired. Later Fred E. Bahrenburg, a veteran of the Hammermill organization, became general manager. Recently he was promoted to vice president and manager of all Hammermill operations but continues as general mgr. at Watervliet.

Louis J. Scheid, member of a founding family of Watervliet, is director of manufacturing. He was closely identified with the introduction of the new semi-chemical pulping process utilizing Michigan poplar and basswood, and this led to the requirement of a suitable recovery process, as described here.

Watervliet was founded in 1910 by Kalamazoo capital, utilizing a plant which had been abandoned and dismantled by American Writing Paper Co. Chief among organizers of Watervliet were Charles B. Hays, James B. Balch and August B. Scheid. The original mill, built by Holyoke, Mass., papermakers, in 1894, was sold to American Writing Paper in 1899 and this company closed it down in 1905. Brush coating was introduced in 1912 and in time Watervliet became distinguished for its high grade coated and lithographic papers.

able odors, and there is constant effort to attain this level in everyday operation. One improvement under consideration is to add more contact surface to the carbonation system in order to lower the residual NaHS level in the carbonated liquor.

Masking compounds have been tried and seem ineffective. Investigation of a chlorine scrubber indicates that scrubbing of the gases with chlorine would be extremely uneconomical. Although the chlorine experiments indicate that oxidation in the flue gas may be promising, it is felt that refinements in operation will prove to be the ultimate solution.

The liquors and gases handled throughout the system are quite corrosive. At Watervliet corrosion has been checked by metallizing the digesters with stainless steel and by using partially stainless multiple-effect evaporators and stainless piping throughout the recovery system.

Mild steel tanks proved suitable; and where excessive corrosion was feared, such as in black liquor storage tanks, coating with a combination coal-tar epoxy resin has given excellent results. The duct from the cyclone separator to the induced draft fan as well as the fan housing were originally Corten steel. This proved unsatisfac-

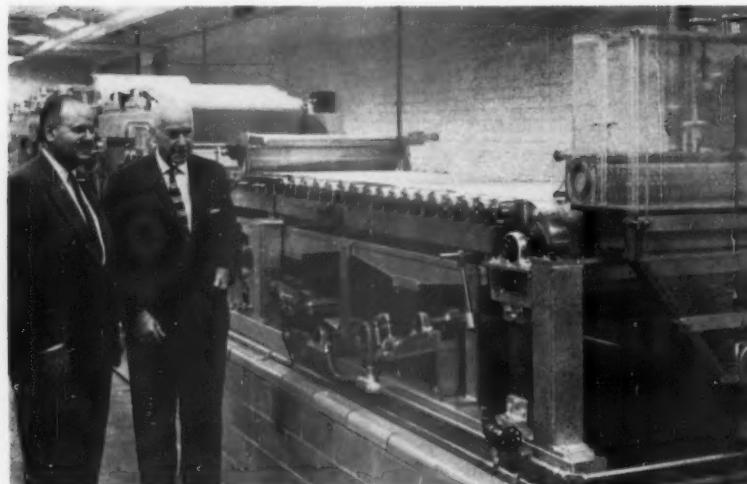
tory and was replaced with stainless steel.

The sulfiting tower is tile lined, but the carbonation system towers and duct work are of asbestos reinforced furane resin. The factor determining selection of solid plastic rather than tile lining in this case was the relatively small tower diameter.

The fan in the carbonation system is plastic-lined mild steel and has shown no signs of corrosion. A corrosion test program has been conducted, and results indicate 316 and 321 stainless are excellent, with neoprene and plastic linings showing some promise at various points in the system.

24-in. Fourdrinier Unveiled at WMU

... during Third Annual Pulp & Paper Conference



INSPECTING NEW LABORATORY PAPER MACHINE at Western Michigan University are Dr. A. H. Nadelman, head of the Dept. of Paper Technology, and Paul V. Sangren, school president.

Training and research in papermaking has been expanded at Western Michigan University with the dedication of a 24-in. laboratory paper machine. The Fourdrinier was built and installed at a cost of \$75,000, made available to the school through the Louis Calder Foundation.

Occasion for the presentation program was the Third Annual Pulp & Paper Conference staged by the Kalamazoo school. The theme of this year's meeting was, "Size Press and Calender Treatment." More than 200 representatives of the pulp and paper and allied industries from the United States and Canada attended.

Known as the Louis Calder Paper

Machine, the research unit will produce paper at 500 fpm in a variety of grades. At the end of January some special equipment was yet to be installed before the machine could be put into actual operation. The Fourdrinier was constructed by Wheeler Roll Co. of Kalamazoo.

In his dedicatory remarks, Assoc. Prof. John A. Fanselow pointed out that in design and layout much thought was given to provisions for possible future modifications. "We could not predict these needs," he said, "but we tried to design for flexibility of arrangements. It is hoped that we may incorporate a Yankee type dryer for the production of both

wet and dry creped and machine glazed papers."

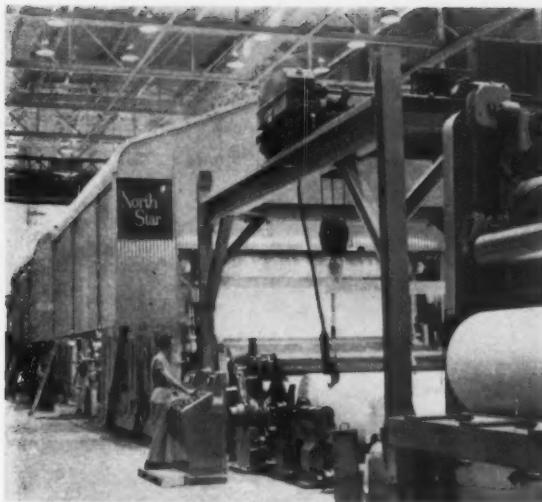
Auxiliary Equipment Scheduled

Bert H. Cooper, vice pres. of Kalamazoo Paper Co. and president of WMU Paper Technology Foundation Inc., announced that in addition to the \$105,000 already given the university, the Louis Calder Foundation is making available an additional \$165,000. The funds will cover the cost of building a coating machine, dryers, calender stacks and color mixing equipment. The foundation will also finance the design and construction of a building to house them.

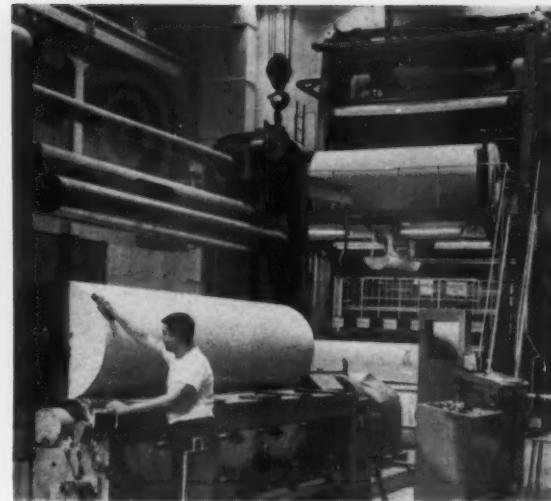
Individual Craving Submerged

That "American society has submerged the individual craving for a job well done" was charged during the conference by Fred E. Bahrengburg, vice pres. and mgr. of mills for Hammermill Paper Co. and gen. mgr. of Watervliet Paper Co. "We must develop a community of interest in the home and the school," he said, "to develop the individual. Let's get business back into politics. If we want to preserve freedom and keep this country sound and stable, we must participate in politics at least at the local level."

Craftsmanship should fill its rightful place, but nevertheless there is a constantly growing emphasis on science in relation to pulp and papermaking. In an address to the meeting, Harry E. Weston, executive secretary and treasurer of the Superintendents Assn., declared: "The right kind of (research) programs should create a climate of curiosity; should broaden horizons; should stimulate imagination; should strengthen self-confidence; should develop ability to deal with unexpected situations, and should create interest in both people and the pulp and paper industry."



TRAILING BLADE COATER at Oxford Paper Co., Rumford, Me., is 150 in. wide, has speed range from 200 to 2,000 fpm.



HIGH GLOSS enamel finish is imparted by giant Rice Barton Eck supercalender at right background. At left, Cameron rewinder-slitter.

New Coater Makes Wide Variety

Oxford official says its North Star is precursor to many remarkable advances that will be made in coating field

Oxford Paper Co., Rumford, Maine, after eight years of preparation, has launched its North Star coater, a 150-in. trim off-machine trailing blade unit producing a wide grade structure of top-quality offset and letterpress papers.

Cost of Oxford's long-term project has been approximately \$6,500,000. In a recent statement to PULP & PAPER, Harold M. Annis, vice pres. for research and development, said the Rice Barton coater is producing some "terrific papers." The unit's speed range is from 200 to over 2,000 fpm.

The Oxford coater is another in a long line of breakthroughs involving the trailing blade coater. It is hailed by some technicians as one of the most significant developments in the coating industry.

"It is the opinion of Oxford," says Vice Pres. Annis, "that printing papers in 1959-1960 will go through some revolutionary changes. We believe that the manufacture of coated printing papers will change radically. Our own coater is an early start of a remarkable era of coated papers."

Oxford's application of the trailing

blade coater is said to be new—and in this newness is its significance. Off-the-machine for greater flexibility, the North Star is used for a wide grade structure of top-quality high-gloss and dull (non-glare) enamel papers. In addition, as modified by Oxford, the full coating weight is applied. This means the trailing blade coater is no longer limited to light coat weights.

"The trailing blade coater," says Mr. Annis, "and other novel features (one is the Rice Barton Gardner high-velocity air dryer) have made it possible to produce printing papers for letterpress, offset and gravure with a levelness of surface unequalled by conventional coating methods."

"The extraordinary levelness of North Star coated papers plus the fact that this levelness is obtained without heavy supercalendering is the key to their superior printing qualities."

Warming up on his favorite topic, Mr. Annis went into greater detail on blade-coated papers. This leveling action of the blade coater, in greatly reducing the amount of supercalendering required, is extremely important because supercalendering tends to

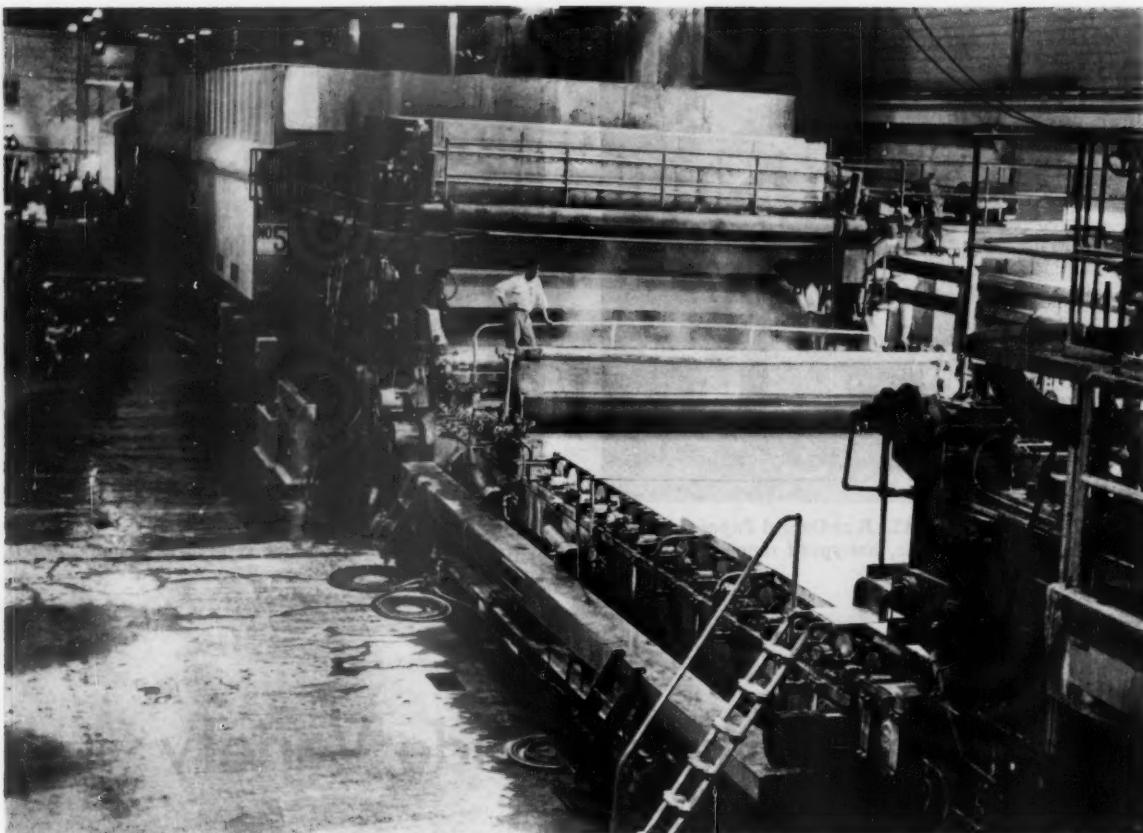
decrease bulk, compressibility, brightness, opacity and strength; properties that contribute to the appearance and printing quality. Because they require less supercalendering, North Star coated papers have a built-in cushion that enhances printing qualities.

"Supercalendering also increases coating density, reducing ink absorption and increasing ink drying time. Because their coating is less compacted by supercalendering, inks dry faster on North Star coated papers."

Superior Printability Claimed

The most dramatic feature of blade-coated papers is superior printability, says Oxford. Solid areas are denser, halftone dots are cleaner and sharper. In full color process work there is better trapping of successive colors of ink. Less printing pressure means longer continuous runs with few press adjustments and longer plate life; it also reduces packing indentation.

Coated papers from Oxford's on-the-machine coaters are fed to the 150-in. North Star Coater for double coating. The coating web is dried by the Rice Barton Gardner dryer.



AFTER REBUILD, this groundwood specialty paper machine has a 25% longer wire and double its original speed.

Machine Rebuild Ups Speed

Fraser maintains quality at higher speeds on rebuilt No. 5 machine.

Adds new Fourdrinier, revamps press and dryer sections

• Fraser Paper Ltd.'s. No. 5 groundwood specialty paper machine, 226-in. wide, had an 80-ft. long wire. Top speed was 1,000 fpm. After rebuilding, No. 5 now has a new stainless steel clad Fourdrinier with 100-ft. long wire and a top designed speed of 2,000 fpm.

Economic engineering plays an important role when a company comes to the "shall we rebuild or shall we buy a new machine" crossroads. Under certain circumstances, with higher costs involved, it is advantageous to take the rebuild road. This may not always be practical, but in this particular instance, for Fraser, it was. Since 1955, Fraser has rebuilt two bond machines and one groundwood specialty paper machine.

As a matter of interest, Fraser Paper is now planning the addition of a new bond paper machine over 200-in. wide. Details on machine speed and other features will be announced soon.

Fraser's latest rebuilt machine was completed in 1958 on No. 5. In addition to the new Fourdrinier, the revamped press section has a suction pick-up. A new electrical drive and electrical substations ease the added electrical load. Better drying capacity is provided with a new corrugated aluminum hood, additional dryers. Boosted vacuum pump capacity is another highlight of No. 5 machine.

Fraser Paper, Ltd. is a wholly-owned subsidiary of Fraser Companies, Ltd. Its mills are in Madawaska, Maine's northernmost town, on the

banks of the St. John River. Across the river is the Canadian city of Edmundston, New Brunswick, the home of the executive offices of Fraser and location of its sulfite and groundwood pulp mills.

Pulps produced in these mills are pumped in slush form through pipelines across the International bridge to the paper mills. Fraser makes bleached chemical papers on four machines, groundwood specialty paper grades on two.

A seventh machine is used for off-machine coating.

Pulpwood requirements for the company's three Canadian pulp mills (Edmundston, Newcastle, and Atholville, N.B.,) are drawn from some 5,500 square miles of woodlands.

Suction Pick-Up Gives Better Web Transfer at Higher Speeds

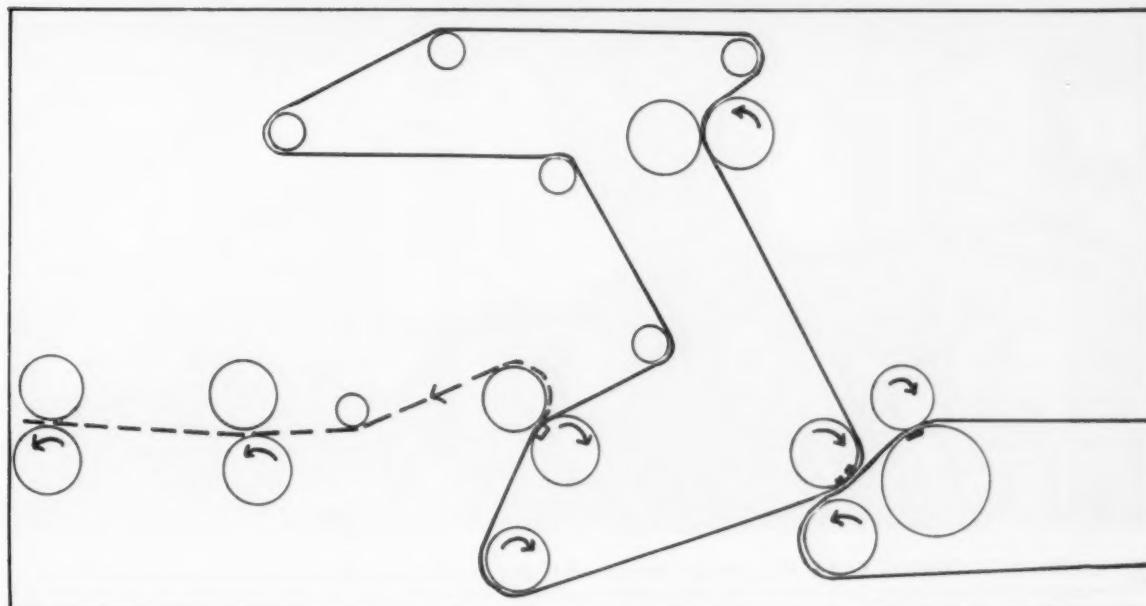
In 1955 when Fraser installed its first suction pick-up on its then new No. 4 bond and waxing grades machine, this was believed to be the first use of the suction pick-up on these grades. Previously suction pick-up

units had only been used for newsprint. Because it transfers sheet from couch to press without altering web formation or breaking the sheet, it enabled newsprint mills to use less of more costly long fibers.

In 1957, Fraser added a second pick-up on its rebuilt No. 1 bond machine and a third on its No. 5 machine. From this progression of suction pick-ups it is obvious that Fraser likes this unit.

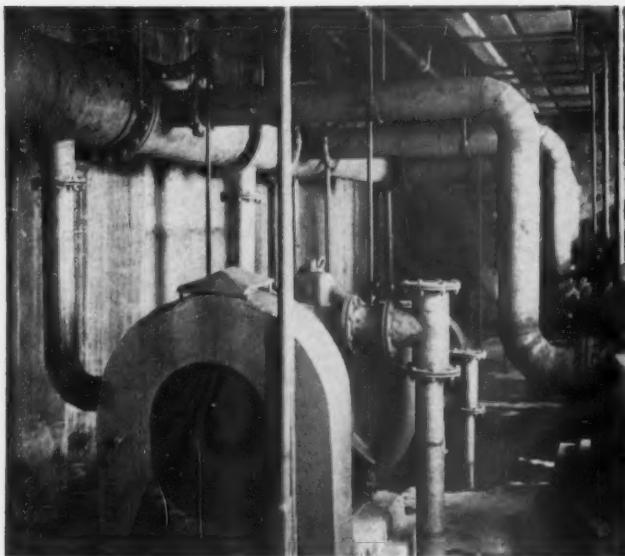


SUCTION PICK-UP PRESS built by Puseyjones is third such unit installed by Fraser.

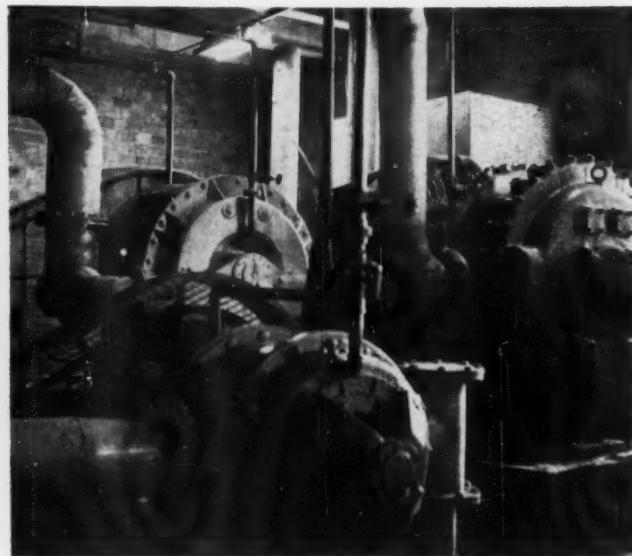


FELT TRAVEL FOR SUCTION PICK-UP PRESS is shown in this diagram of No. 5 machine.

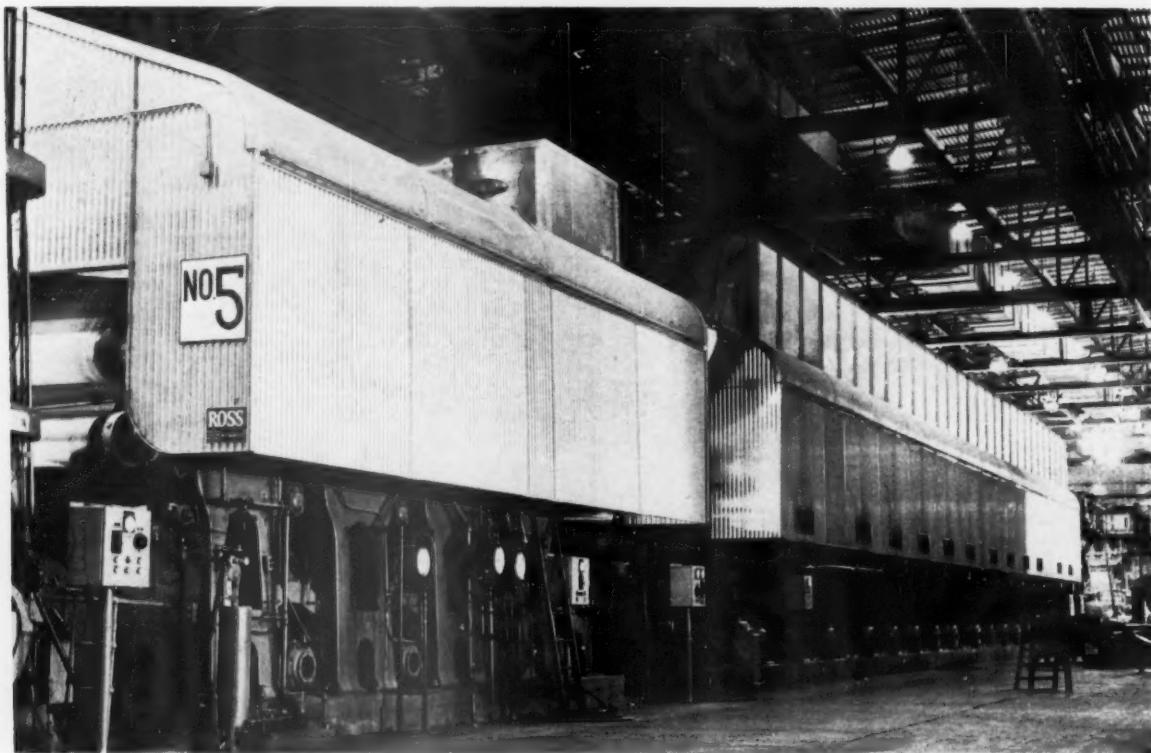
Spotlighting Key Features of Fraser's No. 5 Rebuild



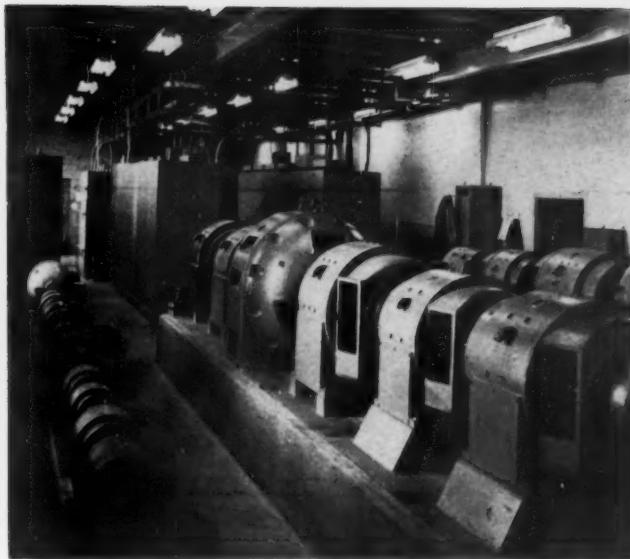
1. FRASER SAVED MONEY on its vacuum piping arrangement by using 24-in. header blank flanges instead of valves. For emergency by-passing of pumps, operator merely has to loosen bolt or rivet and solid portion pivots across on bolt.



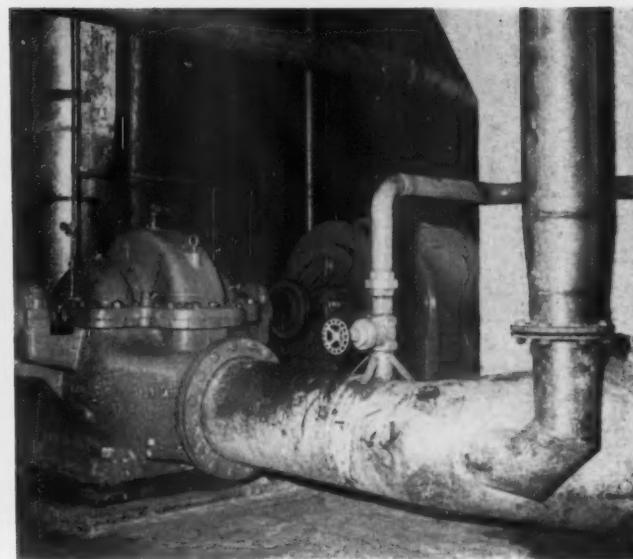
2. MORE WORKING AREA in basement is gained by Fraser in grouping all vacuum pumps in one room. It meant a longer run of piping, but in addition to space economy, grouping of pumps in one closed room reduced noise level in rest of basement.



5. INCREASED DRYING CAPACITY, needed because of higher machine speeds, is gained by this new Ross corrugated aluminum hood, new Ross ventilation system and eight new dryer rolls in main and after-dryer section. Of special interest is that Fraser uses revolving siphons of wrought iron in its dryers; found that stainless steel didn't hold up in the thread.



3. GREATER ELECTRICAL NEEDS of rebuilt machine are compensated by Westinghouse electrical substation. Smaller motors are driven by one direct current motor generator. Machine was rewired, motors and controls changed to 550 v. with MI cable.



4. UNCLUTTERED WORK AREA AS A RESULT OF GROUPING OF VACUUM PUMPS in one room is shown in this picture of new Goulds fan pump. Of note is that opened up work area also contributes to safer working conditions.

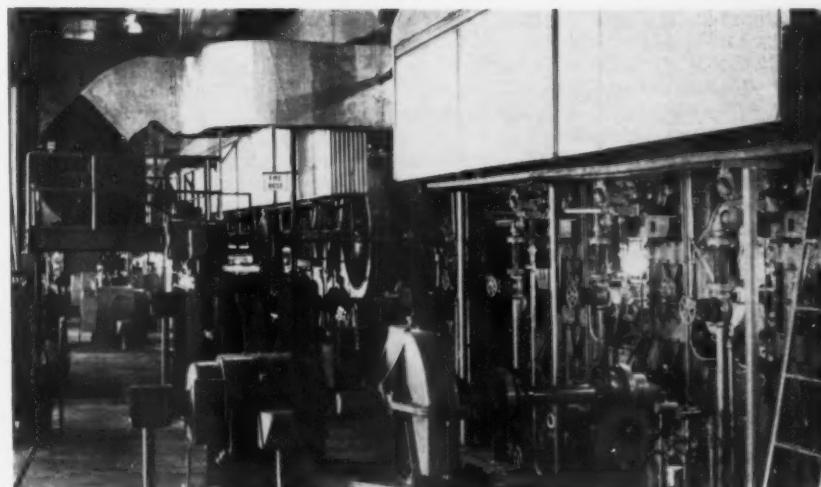
What Fraser Added . . .

Fourdrinier: Puseyjones Rapi-Drape stainless steel clad (right down to forming board) with 100-ft. long wire. Fourdrinier is an improved Rapi-Drape. Wire can be installed without removing Fourdrinier proper from normal position or detaching connections to brace stands, shake, suction boxes or showers. No rolls come out into the aisle, only framing which supports wire undercarriage. Table rolls: 17 13/16-in. dia. Tyer rubber covered with 12 Y-type deflectors, stainless steel with Micarta blades. Wire table is level, flat deck arrangement with no pitch adjustment. Suction boxes: 7. Dandy: 24-in. dia. Automatic Pusey and Jones wire guide. Twin squirts give an even break, literally mash the trim off. Gates Texrope drive on shake.

Stock Prep: Added a fourth Mordern No. 6 Stockmaker. Couch and wire pits: Tiled lined completely to eliminate slime growth. An additional Bird screen. Tore down old machine chest, put in a new Stebbins tile chest.

Press Section: Press framing is all new; reused old press rolls. Added a suction pick-up arrangement. Felt Conditioner is new Bird hydraulic driven, piston-type, four-shoe. Hydraulic system adapts unit to match speed of machine so that shoes won't skip.

Dryers: Added 8 new dryers. Renewed dryer section after size press. Replaced all top dryer gears with Celeron fiber



6. TO REDUCE vibration and noise at increased speeds, Fraser replaced top dryer gears with Celeron fiber tooth gears.

tooth gears to reduce vibration and noise at increased speeds.

Dryer Hood: New Ross aluminum corrugated-sandwich hood and ventilation system.

Calender Cooling System has individual blast gates.

Imco Repulper after first pick-up press.

Pumps: 1 Roots-Conerville, two-stage 22-in. vacuum, 9610 cfm pump on suc-

tion couch driven by a Westinghouse 400 hp weatherproof 720 rpm motor. 4 Nash pumps on flat boxes and suction rolls, 3 Moyno pumps on the vacuum pump separator tanks.

New Drive: General Electric electronic amplidyne.

Broke System: New E. D. Jones broke conveyor system. 4-belt conveyor consists of 4-42-in. 28-oz. Goodrich Neoprene units which feed Jones Brokemaster.



IN GLARE OF TELEVISION CAMERAS, Robert M. Fowler directs attention of his CPPA audience to problems and potentials of Canada's important pulp and paper industry.

Exports: Canada's Challenge

Solution to market and labor problems must be strictly Canadian, CPPA President Fowler tells annual meeting in Montreal

• Congratulations were in order at the recent annual meeting of the Canadian Pulp & Paper Assn. in Montreal. Association President Robert M. Fowler lauded the industry for surviving the 1958 recession.

He warned, however, that there's a terrific job ahead—in world markets and labor relations.

Pulp and paper in Canada has matured. It has had "a little of its accumulated fat sweated out of it," according to Mr. Fowler, "and is a healthier, saner and more efficient industry than a year ago." He praised association members for not repeating "the foolish and childish mistakes of the 30s. . . . During this past year it was good that the newsprint companies—while remaining vigorous and strong—did not repeat the mistakes of their misspent youth."

The Old Question—Exports

Discussing the export problem, the CPPA president asked: "Can men with common interests and a big stake continue to act rationally and reasonably? Or will they lose their courage and their nerve in the face of difficulties and problems that will continue to plague them for some time to come?"

Pulp and paper, said Mr. Fowler, is somewhat typical of the Canadian problem; and if this industry cannot solve its problems, there is "perhaps little hope for other more complex industries and for Canada as a whole. We are the prototype of what makes

Canada a force in the world. We are predominantly exporters, and our products have to face competition in all markets of the world without special concession or advantage.

"We supply a basic need that is growing and will continue to grow. We have the skill and experience and above all the raw materials that the world needs and will continue to need. But we haven't all the raw materials and skills, and experience can be quickly gained by others—if they haven't them already.

"We have no easy acceptance in world markets; there is no open sesame for us or our products."

Industrial Peace, Problem No. 2

There must be a better way, Mr. Fowler told his management-packed audience, for management and labor to settle their difficulties than the "kind of ritual dance" they have been acting out. "The same old routines time after time; a bargaining process that makes little real effort to reach a fair and sound agreement; a series of steps that are labelled with names called 'conciliation' and 'arbitration' but have little that is really conciliatory or judicial in them."

Mincing no words, President Fowler continued: "How often do the parties in an industrial dispute ever get down to real bargaining, to any real meeting of the minds, to any joint appraisal of the real economics of the situation? It is a trial of strength and nerves,

and some sort of compromise is patched up that satisfies no one and leaves scars on everyone.

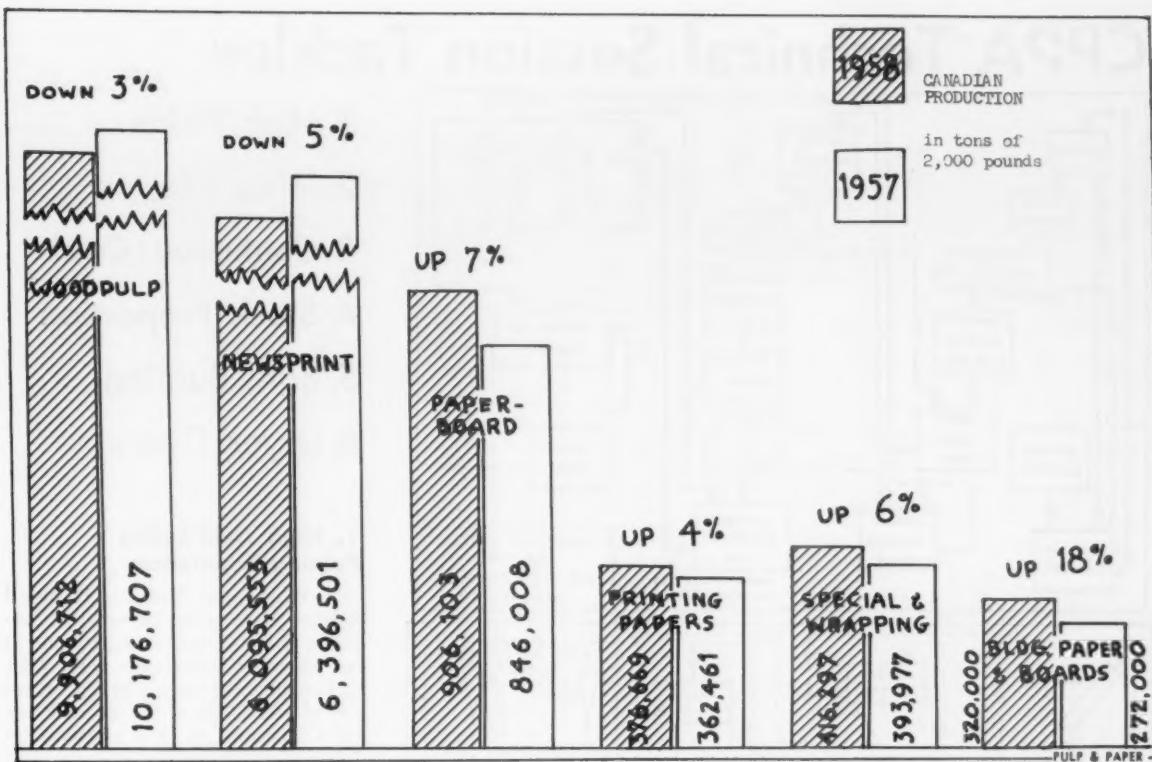
A Word To Labor

"For labor and its leaders . . . they should know much more than they do now about the facts of world trade and world competition in which we are all involved whether we like it or not. They should know quite simply that if Canadian pulp and paper



Jack McKenzie Limerick, New Chairman of Technical Section

Mr. Limerick is a graduate of Univ. of New Brunswick, has done graduate work there and at McGill, and executive training at Queen's Univ. School of Commerce. Since 1937 he has worked for Bathurst Power & Paper, is now director of research and development. Under his direction, Bathurst developed and put into operation one of the first semi-chemical pulp mills to make corrugating board from hardwoods by a continuous process.



DOWN 3% IN OVERALL DEMAND is the final score for Canada's pulp, paper and paperboard industry. Paperboard production surpassed all records for 1958. Business weather was considerably better than expected said CAPPA President Fowler.

companies cannot sell the great majority of their products in world markets because they are too high-cost, it will not matter much if a labor contract calls for wage scales that are not paid, to produce goods that are not made."

A Word To Management

"And manufacturers must come to realize that all labor claims are not automatically and originally bad; that when the facts of world trade make it possible or the advances of technology permit it, wages should be increased substantially, so that those who work for this industry can share fairly and adequately in its prosperity.

"I would like to see wages go up rapidly and generously when it is possible for them to do so. But the other side of that coin (which is seldom seen) is that wages should come down flexibly and materially when we are going through periods of difficulty and tough competition in world markets."

Prosperity Hinges On Exports

Canada is more heavily dependent upon exports than any other industrial country in the world, said Mr. Fowler. New complications are emerging in the form of new trading blocs

and arrangements throughout the world and by the Communist economic threat, he said. "This calls for a complete re-appraisal by Canadians of economic and trading policies, a new approach by governments to the question of taxation of industries dependent on exports; a new emphasis by management on development of sound and flexible merchandising policies, and a new attitude by labor as to the way to create steady jobs in an export industry."

Solution Must Be Canadian

Canada must work out its own destinies in its own way, suggested Mr. Fowler. He doubted whether Canada could import policies from other countries where economic problems are quite different, and the right solutions for them are likely to be different too.

"We must work out our own policies with close and daily knowledge of the Canadian economy. This is no narrow nationalism and implies no criticism of other countries who are seeking answers to their own national problems, faced with their special and different circumstances. In the process we might incidentally achieve something that is distinctively Canadian and more valuable for Canadian companies and Canadian labor."

Importance of Pulp and Paper to Canada's National Economy

1. Accounts for 7% of value of Canadian industry output with an annual production of \$1.4 billion.

2. Output exceeds in value total annual production of wheat and other grains combined; equals the national annual output of mines including precious metals, base metals, iron ore, asbestos and coal; is half again as great as value of automobile industry.

3. Exports more than \$1 billion; accounts for 37% of exports to U.S. and 22% of all exports.

4. Accounts for about 5% of the GNP.

5. Is by far the largest industrial employer (about 335,000 workers).

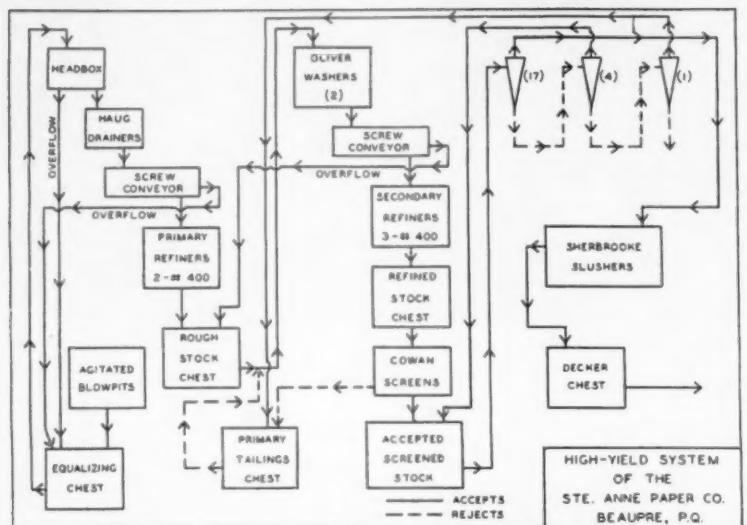
6. Wage bill exceeds combined wages paid by three next largest industries.

7. Is the largest industrial buyer of goods and services in Canada; pays out about \$460 million in wages; \$220 million for transportation; \$34 million for supplies and electricity; \$100 million for purchases of pulpwood.

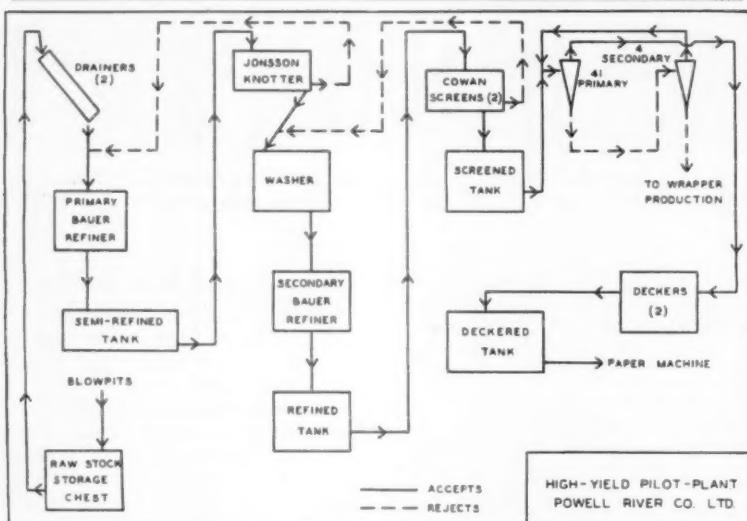
8. Makes Canada the second largest hydroelectric power producer in world. Mills use 25% of total Canadian consumption of electricity and 33% of power used by all industry.

9. Out of every 10 revenue freight cars, one is loaded with pulp, paper or pulpwood.

CPPA Technical Session Tackles . . .



1. High Yields
2. Wire Life
3. Continuous Cooks
4. Stock Proportion
5. Bark Burning
6. Dryer Gears



1. High Yield Sulfite Pulping Experiences

At the annual Canadian Technical Section Meeting in Montreal in late January, six Canadian mills reported on operating experiences with pilot and commercial units. The highest reported yield, 70%, of the six mills was the Gatineau, Que. mill of Canadian International Paper Co. Average yield of the other five mills ranged between 64% to 68%. (See accompanying flow charts for refining, cleaning and washing procedures in these six mills).

Mill comments: Consistency is very important coming from the blow pits. One mill uses an 11-hour cooking cycle (actual cook is 7 hours) and a cooking temperature of 135°C.

One mill was unique in that it does not wash in the blow pit because pit is tiled; uses four vertical agitators. Another mill reported trouble with corrosion due in part to low pH (2.8 to 3) of the stock to the primary refiners.

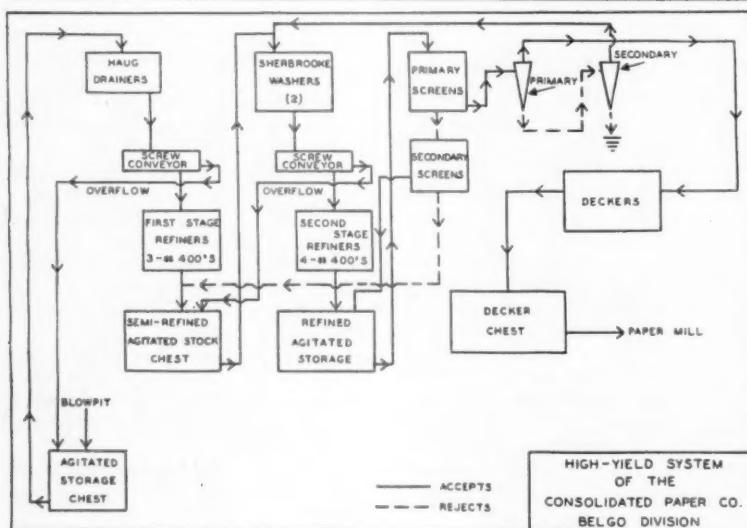
All mills reported quality of the high yield sulfite pulp was equal or superior to low yield. One mill said high yield pulp mullen was about 110 vs. 80 on low yield; bulk about 1.63 vs. 1.40; brightness about the same; dirt lower and shive count down.

Q&A Session

Q. Should most of the refining power be applied in the first or second stage?
A. A 1:1 ratio is satisfactory using 6 hp in each stage.

A. Use twice the hp in primary as in secondary. Power consumed greatly depends upon consistency. Consistency makes a tremendous difference. Ideally, consistency should be as high as possible.

A. It's not too important where power is put in. One mill has gone further and operated satisfactorily with only one refining stage. Depends upon how you want to lay the mill out. About



8% to 10% consistency is desirable. Went to 20% and got into trouble. Anything down to 6% seems O.K.

Q. How effective are circulating systems in high yield digesters?

A. One mill uses such a system. Another mill tried it but it didn't make any difference in pulp quality; made the digester more difficult to blow. No advantage if there is no improvement in pulp quality. This is essential in low yield.

Q. How about temperature?

A. Very important. You may get low yield sulfite very easily.

Q. How about quality of newsprint containing high yield pulp?

A. Every bit as good. Brightness as good or better. One mill aged some wrapped newsprint for two years, and said it was as good as the day it was wrapped. Another mill said high yield is as good as low yield; burst up, tear and bulk the same and operated at same machine speed and same couch draw.

A. One mill used same percentage of high yield as low and under 2,000 fpm had no trouble. Another mill reported higher strength for high yield.

Q. What about temperatures in first and second stage refining?

A. Varies from 42° to 70° in summer; don't use hot water, use white water from the mill. **A.** Use 70° to 80°. **A.** Use 80° at first stage, 50° second. **A.** Use fresh water; 40° in winter, 70° in the summer. Note a 5° rise after first stage.

Q. Do you have any trouble with hangings?

A. Less trouble with high yield. Stopped chip packing, have steam nozzle in top of bottom cone to flush; use 1,000 gpm white water with 135 lb. pressure.

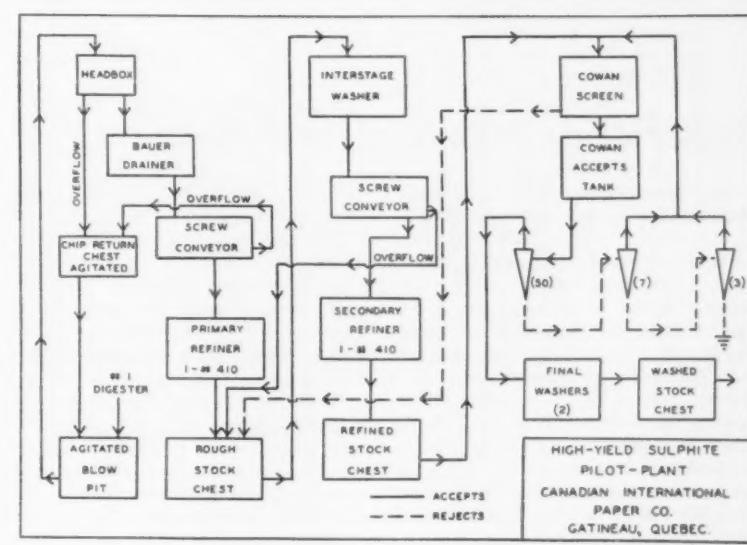
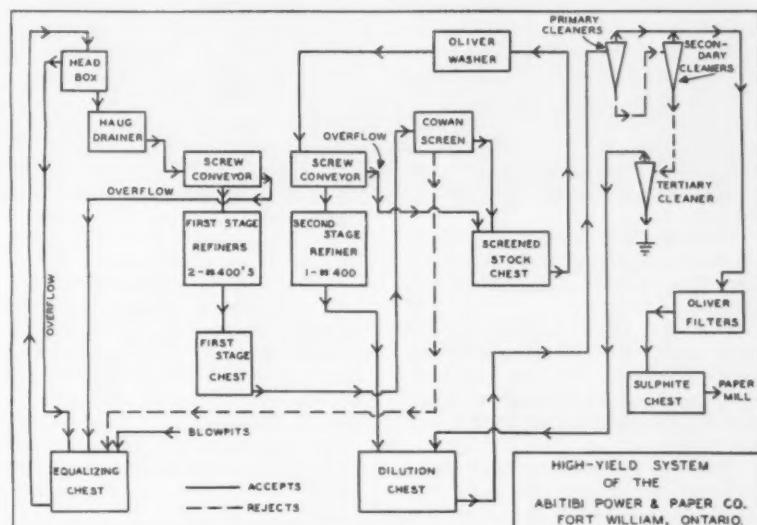
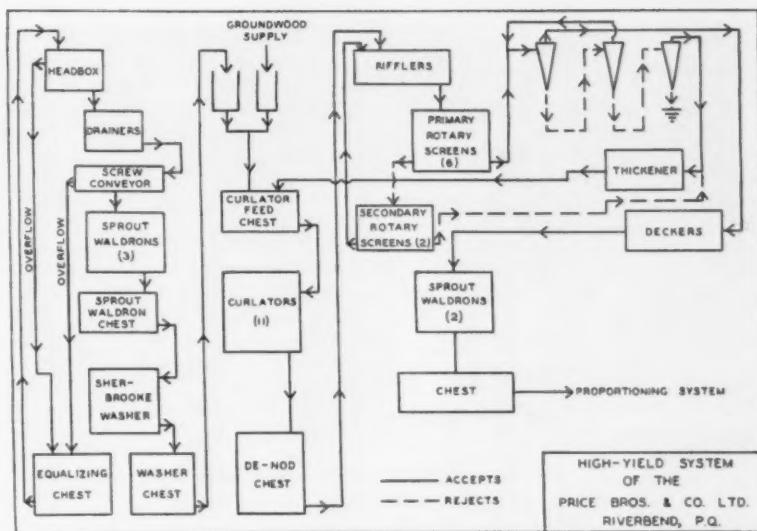
2. Task Force Reports Causes for Low Wire Life

As newsprint machine speeds have increased, wire life has decreased (in some mills average wire life is 6 to 14 days). As a result a task force was set up at the Pulp & Paper Research Institute of Canada at the request of the executive board of CPPA. After a two-year study, their comprehensive report highlights these results:

1. Important wire wear causes are the drag load exerted by flat boxes on the wire; wire speed and quantity of grit in headbox stock.

2. Damage to wire stems from mesh of the wire; damage at the wash roll and length of the wire.

The task force reported that there was no evidence that corrosion affected wire life. If wire could be made to run longer, it explained, corrosion might be a factor, but at present corrosion operates only in isolated cases.



CPA

But, J. D. Broadway, chief, engineering-physics section, research and development, dept., Consolidated Paper Corp. Ltd., said definitely that corrosion was responsible for removing more copper from the wire than wear. One cause he suggested, was that the "copper would be dissolved by the weakly acid white-water and subsequently transferred through ion exchange, to the incoming stock."

3. Continuous Digester for Northern Hardwoods at Eastern Corp.

Pulp uniformity, sizable savings in space and manpower requirements were main factors behind Eastern Fine Paper and Pulp Div., Standard Packaging Corp.'s selecting a Sandy Hill-Kamyr continuous digester in its new bleached kraft pulp mill (see PULP & PAPER, Aug. 1958). The 200 tpd mill at Lincoln, Me., began operations in May, 1958.

Problem: In the low pressure 16 rpm feeder, chips were being cut between rotor blades and feeder housing. Solution: Speeded up feeder to 24 rpm.

Problem: High level in chip chute, strainers plugging with sawdust. Solution: Blow back through strainer with steam.

Problem: High pressure feeder; ends near pockets plugging with sawdust. Solution: Can be corrected quickly with steam line and valve provided just beside low pressure steaming vessel.

Problem: Chip chute level alarm. Rotating paddle indicator inside chip chute was interlocked to kick out low pressure steaming vessel and chip meter if chips were not getting away

fast enough. Did not work well. Solution: photo-electric cell works well. Steam purge inside chip chute keep sight glasses clean so photo cell will receive enough light and operate as designed.

Problem: Valve packing on indirect liquor heaters. Solution: Switched to Teflon.

Problem: Blow line plugging. Solution: Two magnets on conveyor but sometimes tramp metal gets by and plugs extractor and blow line.

Problem: Hang-ups. Considerable trouble after digester shut-down. Solution: Steady operation. Slow circulation at start-up after several hours of downtime.

4. Continuous Stock Proportioning Increases

Stepping closer to the day of the automatic paper mill, more and more mills are adopting continuous stock proportioning systems. One big objective is to reduce labor required.

The modern 4-machine newsprint mill of Price Brothers & Co. Ltd. at Riverbend, Que., converted from a gate-type proportioning system to a Foxboro magnetic flowmeter system. Basically, explains W. E. Hawkins, paper mill engineer, the company wanted to maintain a desired sulfite to groundwood ratio and provide for recording and easy adjustment of this ratio. Because of difference in speed between two pairs of the machines, it wanted to supply a different furnish to each pair and automatically control addition of color and chemicals to machine furnishes.

Also important, Price Bros. wanted to have stock consumption figures to its accounting dept. and operating personnel.

The Riverbend installation uses two magnetic flowmeters and, of special

interest, there are no bypass circuits around the flowmeters or control valves. Mr. Hawkins said the installation has been very successful and has been trouble-free with low maintenance costs.

5. Bark Burning Saves Money

Renewed interest in bark burning stems from the two-fold desire to reduce steam generating costs and at the same time eliminate bark content in mill effluent. (In a feature article in PULP & PAPER, Dec., 1955, it was reported that Rome Kraft Corp., Rome, Ga., debarks its logs immediately upon arriving at the mill; that the bark is then at the best possible condition for use as fuel and definitely has a higher fuel value. Bark is said to provide 15% of steam requirements and in effect the company requires about \$1.50/unit of purchased wood as fuel.)

Joseph Rockley, chief engineer, Anglo-Newfoundland Development Co. Ltd., reported on a barking burning installation at Grand Falls, Nfld. He estimated that savings using wet bark would amount to 36¢/1000 lb. over cost of bunker "C" oil.

6. Eight Days to Change from Open to Closed Dryer Gears

The Anglo-Canadian Pulp & Paper Mills in Quebec City recently changed three of their newsprint machines from open to new Dominion enclosed gear dryer drives. Reason for the change was to permit higher machine speeds, which had been limited by the open gear drives because of safety, speed limitations, noise, inefficiency.

Preliminary planning for three machines involved many months but paid off in the believed-to-be-record installation time on one machine of 8 days downtime.

Buy Florida Mill, Will Add Machine

The Pan-American Paper Mills of Hollywood, Fla., have been purchased by Hawthorne Paper Sales Co., of Kalamazoo, Mich., and will be converted to manufacture of offset and writing papers, and later, with addition of another machine, to book paper.

William Slavin, president of Hawthorne Paper Sales Co. and also of the parent Hawthorne Paper Co., of Kalamazoo, said the rebuilt and modernized mill in southern Florida will be strategically located in a rapidly growing market in the Southeast for these grades of paper.

A large group of stockholders have been operating the Florida mill for almost two years making toweling from waste paper. It has a 74 in. machine. The Kalamazoo company acquired nine acres of land and an excellent water supply in the purchase, said Mr. Slavin. The mill is on the Seaboard Railroad.

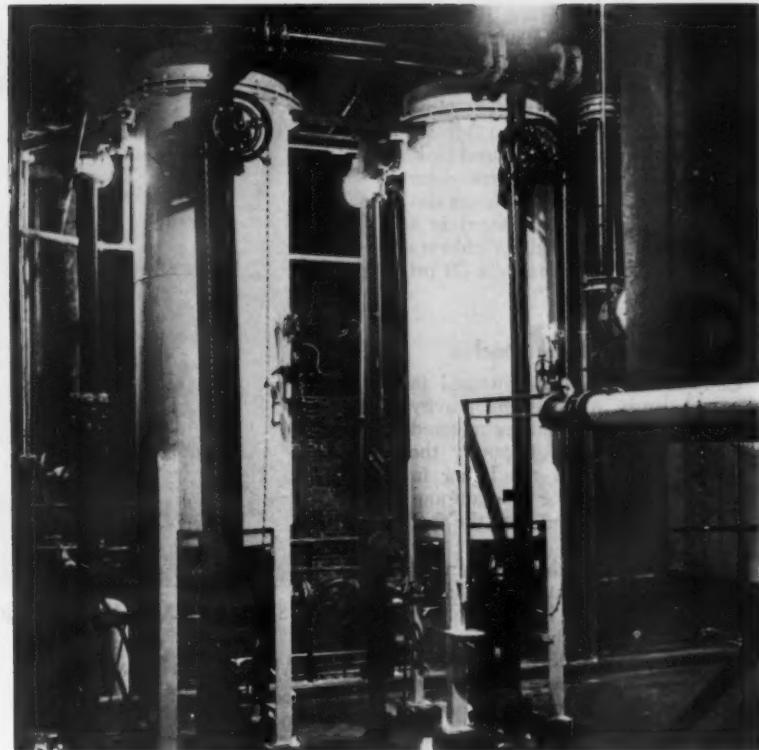
In order to convert the present machine to offset and writing grades, new beater room equipment will be installed. Also more finishing equipment will be added. Raw material will be purchased wood pulp and prepared rags or cotton linters. Up to 50% rag

content will be used.

Hawthorne Paper Sales Co., which is a wholly owned subsidiary of Hawthorne Paper Co., has options on a 164 in. machine and a 142 in. machine and one of these is to be installed in the Hollywood mill, to make book and offset grades. A modern de-inking plant will be built and equipped within the next 18 months, said Mr. Slavin. He added that he has obtained clearance from the county commissioners in the Florida location for such a plant.

Principal associate with Mr. Slavin in the venture is his son, Louis J. Slavin, who is vice pres. and secretary of Hawthorne Paper Co. and the sales subsidiary.

IMPROVED EFFICIENCY of chlorine dioxide generation is gained by use of secondary generator (left). This is new feature of Solvay process.



Chlorine Dioxide for Two Pulps

Penobscot gets better brightness for soda and sulfite pulps with highly instrumented Solvay generators

Features of Penobscot's New Bleach Plant

1. The entire ClO_2 generating plant is run by sulfite bleach plant operator on part time basis. Requires about three hours per shift.
2. Uses the Solvay improved process for generating chlorine dioxide.
3. New building is part of sulfite bleaching and washing building, is double-brickled on two sides, Transite faced on third wall for future expansion.
4. Methanol is stored outside as are other chemicals.
5. All pumps are in basement; chemical feed is to top of building to head tanks; all are gravity fed.
6. Storage tanks for ClO_2 solution are glass-lined with 2-in. foam glass insulation.
7. PCF is the first mill to use the Impco inclined single shaft steam mixer, which reduces hp requirements by 100%, says PCF. Instead of 60 to 80 hp, it uses 35 to 40 hp.
8. In event of power failure, a solenoid valve lets in mill air from mill air supply to automatically close off ClO_2 solution.
9. Two chlorine dioxide generators are used.
10. New plant integrates with existing one, saving labor.

Joining the swing to high bright pulps, Penobscot Chemical Fibre Co. at Great Works, Me., is now bleaching both its soda and sulfite pulps by chlorine dioxide stages.

"Our chlorine dioxide installation started up with almost no trouble at all," says Leonard A. Pierce, Jr., vice president—operations, "and we have had no trouble of any kind during the past year.

"At present our sulfite pulp is bleached to about 90 G.E. brightness and our soda pulp to 88% G.E. brightness," he continued. "We expect to improve this soda pulp brightness by early 1959 when we complete improvements to our chlorination stage which will enable us to operate at higher consistency. We are also completing a new caustic extraction tower which will enable us to run that stage at a high consistency instead of low.

An improved Solvay process gen-

erates the chlorine dioxide. Basically, it uses methanol to reduce sodium chlorate in sulfuric acid. Methanol is unloaded from tank cars by a head pump to a 15,000 gal. storage tank, then pumped as needed to a 2-ft. by 3.5-ft. high 65-gal. capacity head tank.

Sulfuric acid arrives by truck (there is a plant located about 1.5 hours distance from PCF) and is stored in a 12,000 gallon tank. Sodium chlorate is flushed from tank cars by a 50 psi hot water line.

Chemical Flow Described

Chemicals have to be metered in proper balance. All feed by gravity from the head tanks and are metered by Brooks rotameters. Bi-hourly the plant operator checks the liquor in the No. 1 generator for chlorate and acidity. 90% of the feed is to the first generator.

Sulfuric acid from the head tank is diluted with water and cooled in a carbon graphite tube heat exchanger (41,000 btu/hr.), reduced from 66° Be. to 60° Be. It is then metered to the bottom of the two generators to maintain proper acidity.

The primary generator, being endothermic, has to be cooled. Temperature is kept to about 135°-140°F for best economy of chemicals and efficiency. Concentration of chlorine dioxide gas is kept to about 10%; ranges from 8% to 13%.

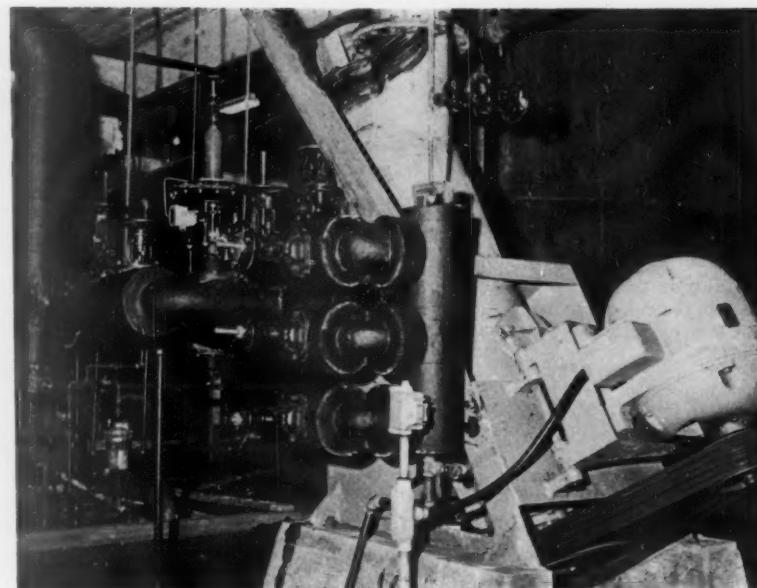
The second generator, twin in size to the first, is heated to 138°F by a 155° water jacket. Gas from each generator is diluted by stripper air blown into the bottom of each generator.

ClO₂ gas, from the top of the Solvay generators, goes through a glass pipeline to the bottom of the brick-lined absorber with air. Chilled water (40°) from the steam refrigeration unit produces 6 gpl to 7 gpl of chlorine dioxide solution. Two 11-ft. by 12-ft. glass lined storage tanks hold the solution by both soda and sulfite.

Sulfite Bleaching in 5 Stages

Present sulfite bleaching sequence is chlorine, caustic extraction, hypo at 12-14% stock consistency, chlorine dioxide and finally a second hypo stage at 6% consistency. Batch bleachers for hypo are used in both stages. An upflow Sandy Hill chlorine tower and downflow caustic extraction tower were installed in 1955 and are still used as such. After bleaching, sulfite pulp is cleaned in a battery of 330 Bauer Centri-Cleaners.

Chlorine, caustic extraction and hypo stages precede two chlorine dioxide stages for bleaching soda pulp. This differs from the sulfite sequence which uses one stage of ClO₂.



IMPCO STEAM MIXER HALVES hp requirements in PCF bleach plant.

Steam Mixer Uses New Concept

Of special interest at PCF is the new Impco steam mixer developed especially at Penobscot by Impco. Considerable savings in horsepower cost/ton is gained while maintaining an accurate temperature increase. This is done without increasing the normal steam requirement.

The mixer uses a single through shaft with curved mixing arms installed in an inclined housing. Mixer inlet and outlet are arranged in a straight line, simulating vertical pipeline flow. Pulp is retarded in this downward flow by a series of alternate horizontal shelves or trays. Steam inlets are next to these shelves.

Homogeneous steam mixing is accomplished by the repeated action of the paddles sweeping the pulp from shelf to shelf across paths of incoming steam, for complete and rapid dispersion.

The use of this single shaft mixer, when used as a steam mixer, closely parallels the conventional double-shaft mixer effect. A 30 hp, 900 rpm motor, supported on an integral adjustable base, drives the mixer through a V-belt. Capacity of the mixer is 200 tpd of high density pulp.

One Unit, Two Uses

Penobscot has an unusual water cooling set up. A Jet-Vac 4-stage steam refrigeration unit chills water that is used to absorb the chlorine dioxide gas. In the summer, it also chills the water that is used to make up the lime solution for use in sulfite Barker tower acid system.

The refrigeration unit has four

booster steam jets and two primaries (150 psi and 300 psi). One booster is 2,000; three are 3,000. The unit cools 340 gpm total; 60 gpm to chlorine dioxide, 280 to the bisulfite acid plant. 40° chilled water is used for the chlorine dioxide absorber; 50° for the acid plant.

Principal Equipment

2 Solvay chlorine dioxide generators: 3-ft. dia. by 10-ft. high.

1 methanol storage tank: 15,000 gal. capacity; 12-ft. dia. by 18-ft.

2 sodium chlorate storage tanks: 15,000 gal. capacity each; 12-ft. by 21-ft.

1 sulfuric acid storage tank: 15,000 gal. capacity; 12-ft. by 18-ft.

2 chlorine dioxide storage tanks: 15,000 gal. capacity each; 11-ft. by 20-ft. Pfaudler glass-lined.

1 chlorine dioxide absorber: 2-ft. by 33-ft.

Refrigeration unit: Jet-Vac.

Piping: Sulfuric acid line is Saran-lined steel. Sulfuric acid line from head tank to cooler is Carpenter 20. Air, water and methanol lines are PVC, stainless steel, Saran-lined.

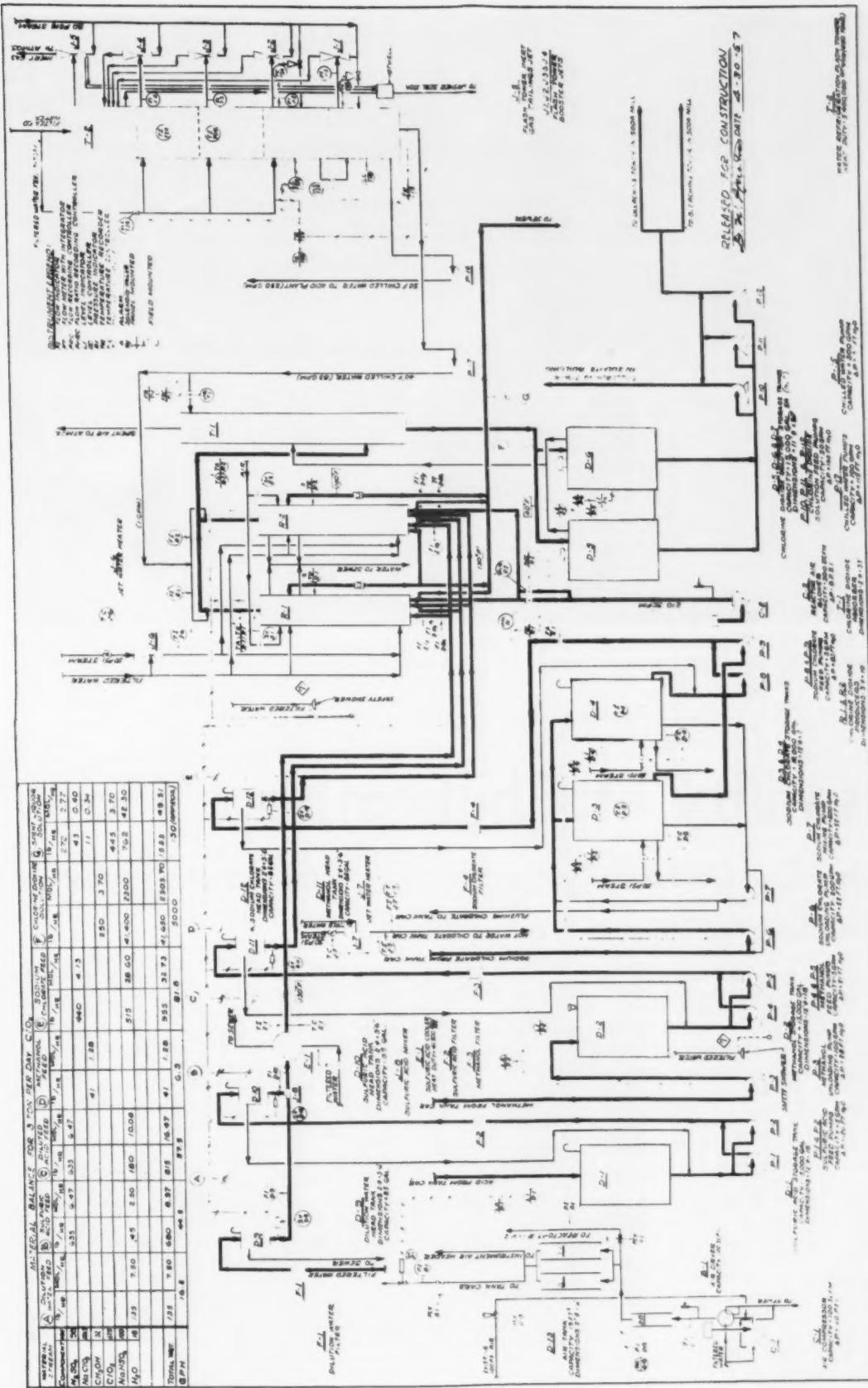
Diaphragms and valves: Saran-lined valves with Teflon diaphragms on acid and chlorine dioxide solution.

Bleachery mechanical equipment: ClO₂ mixers, circulators, and dilution nozzles, all by Impco.

2-8-ft. by 12-ft. vacuum washers and two 8-ft. by 14-ft. vacuum washers by Impco.

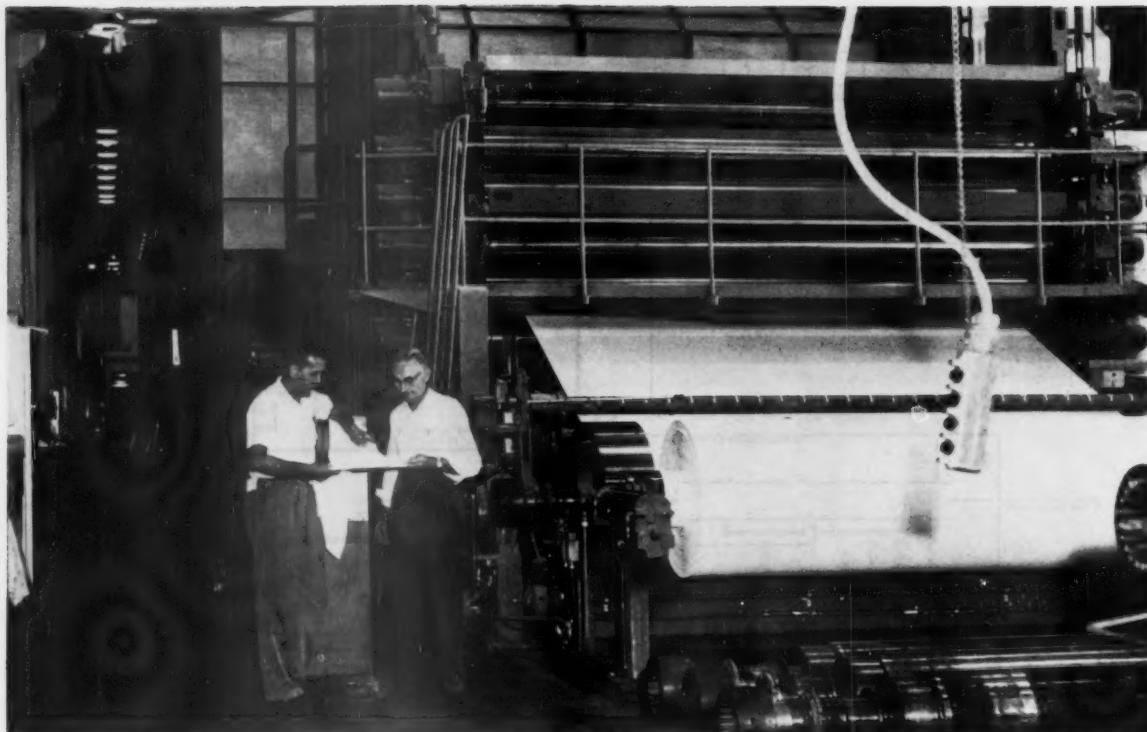
Plant designed by Penobscot Chemical Fibre in cooperation with Rust Engineering Co.

Tank fabrication by Portland Tank & Copper.



PULP & PAPER — March 1959

Process Flow Diagram of 3 ton/day Chlorine Dioxide Unit, Penobscot Chemical Fibre Co.



GIVING CLOSE SCRUTINY TO THE HIGH-QUALITY SHEET at the dry end of Chillicothe's new No. 4 machine are Kon Matchuk, gen. paper mill supt., and William Taylor, recently retired paper mill supt.

Versatility at Chillicothe

No. 4 machine at Ohio mill is yet another step in the industry's constant effort to achieve the ultimate in automation

• Automation has increased the need for men at Chillicothe Paper Co. With the start-up of its new No. 4 paper machine, about 100 employees have been added to the payroll, and the Chillicothe, Ohio plant is continuing to turn out paper just about around the clock.

No. 4 machine, designed and built by Rice Barton Corp., combines the best in functional features with top-notch engineering standards so that its watchword is "versatility." It is adapted for either short or long runs of various grades. In the words of Chillicothe management, "It shoots for top quality and is still able to make just about anything."

Definitely a high point of the 188-in. Fourdrinier is its worm gear drive supplied by Cleveland Worm & Gear

Co. F. L. Zellers, until his recent retirement vice pres. at Chillicothe, pointed out the logical advantages: the machine has openness and more accessibility; the dryers may be spread farther apart; all gears are totally enclosed for safety; less space is required; broke removal is greatly facilitated; and air circulation is improved.

Responsible for the machine installation was Mead Corp., which only months ago became the parent company of Chillicothe Paper. The unit was designed for operating speeds of approximately 1000 fpm in the production of regular offset and papeterie grades in the 70- to 175-lb. book grade range.

Guiding lights for the project—which also included a new stock preparation system—were Mr. Zellers and

W. A. Thomas, chief engineer at the time of the installation and now mill mgr. Engineering work was supervised by Chas. T. Main Inc. Actual erection was under the supervision of Eichleay Corp.

The machine trims 174 in. and is equipped with a 900-hp drive. It has a Valley Iron Works Co. headbox and inlet and three Selectifier screens. The unit is entirely of Rice Barton construction with the exception of a few parts such as the Beloit Iron Works 36-in. suction couch. The 188-in. wire is 93 ft. in length. The seven oscillating suction boxes as well as the suction couch, first press and felt conditioners boast separate vacuum pumps. The Dorr-Oliver Inc. vacuum saveall is located above the machine on a new mezzanine floor level.

This is the stainless steel age in paper mill expansion. Both Mr. Zellers and Mr. Thomas pointed up the extensive use of stainless in the Chillicothe project. Actually, the stock touches virtually nothing but stainless. Hydrapulpers supplied by the Shartle Div. of Black-Clawson Co. and the fibremaster refiners (E. D. Jones Corp.) are of stainless steel construction, as are the headbox, piping, stock-making equipment and the white water piping system.

Supplying stainless piping and tanks were Felker Bros. Mfg. Co. and Brown-Singer Co. Working through a direct contract with Brown-Singer in the stainless steel fabrications was Ronningen-Petter Co.

Paper mill cleanliness is a must. Kon Matchuk, gen. paper mill supt., points out stainless steel's advantages. It maintains uniform cleanliness in the stock, it avails interchangeability, and it makes wash-up jobs easier.



W. A. THOMAS, now mill mgr. at Chillicothe, helped guide installation of new machine.



F. L. ZELLERS, now retired, then vice pres., watched first stock come through the preparation system.

Stock Flow—One-Man Control

The new mezzanine floor constructed above No. 4 machine houses a modern graphic panel controlling the entire stock preparation system. The system includes two Shartle Hydrapulpers, four E. D. Jones Fibremaster refiners, a Trimbley Machines Inc. metering system, two Miami No. 5 Shartle jordans and a series of 11 Bauer Bros. Co. cleaners.

From the single panel the operator can control the entire stock preparation system of Nos. 3 and 4 machines, including all stock flows, agitators,

chest levels, refining and other steps and procedures to which the stock is subjected. Control equipment throughout the Chillicothe plant was supplied by Foxboro Co. and Stamm Drying Controls.

Press Section

All table, press and felt rolls are rubber-covered. The press section consists of one hydraulically-loaded Rice Barton suction press with a 30-in. diameter Beloit suction roll. The second press is equipped with 31-in.

rolls, also hydraulically-loaded. Also included in the press section is a set of 31-in. diameter smoothing rolls.

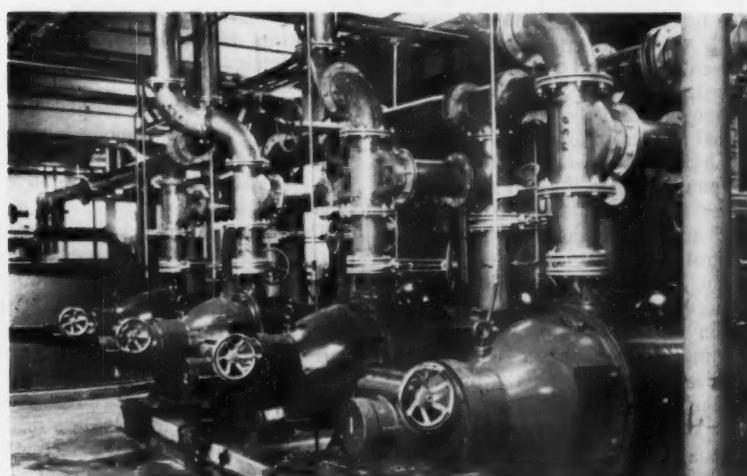
Rolls of the second press (a reverse press) and the smoothing press are interchangeable with regard to bearing mountings and face length.

Back Side Accessibility

No. 4 boasts forty 5-ft. diameter paper dryers and 12 felt dryers. These dryers are equipped with the Cleveland Worm & Gear enclosed drive that makes the back side of the paper machine practically as accessible as the front. In addition to the smooth power flow inherent in worm gearing, visual inspection of the unit is much easier than with conventional design.

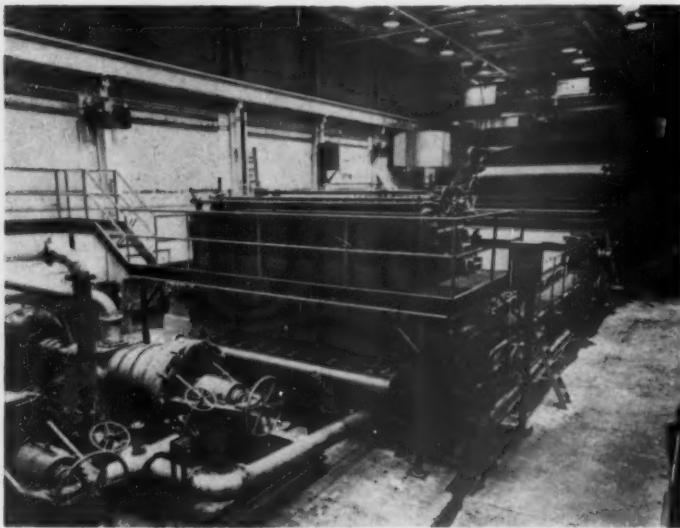
J. O. Ross Engineering Corp. furnished hoods for the dryer section. Included in the system is equipment of the latest type for bringing air into the machine room and aisles and for discharging the air against the felts, and this makes for more efficient drying.

A set of vertically-arranged breaker rolls, 24-in. diameter chilled iron, separate the first and second dryer sections. Dividing the machine's second and third dryer sections is a Rice Barton horizontal size press. The size press rolls are of 32-in. diameter with face widths of 183 in., the first roll covered with 1-in. 20 P&J Plastometer rubber and the second with $\frac{1}{2}$ -in. zero hardness rubber.

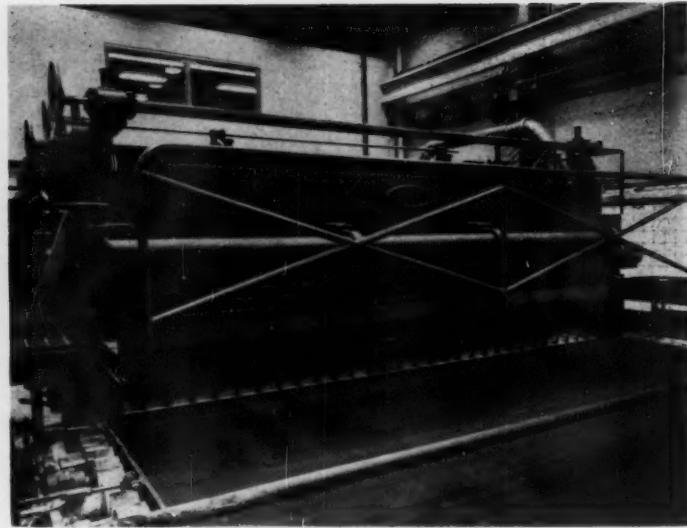


EXTENSIVE USE OF STAINLESS STEEL is demonstrated in this view of E. D. Jones Fibremaster refiners.

VERSATILITY AT CHILlicothe



VERSATILE NO. 4 MACHINE is adapted for short or long runs of various grades. Built by Rice Barton, the machine trims 174-in., is designed for 1,000 fpm speeds.



NEW VALLEY INLET supplies stock to 93-ft. long Rice Barton Fourdrinier. In background is part of new mezzanine level where auxiliary equipment is located.

Hydrapulper—Tailored to No. 4

Two open-side calender stacks follow the last dryer section on Chillicothe Paper's new No. 4. Design of the units permits roll removal from the stack sideways. The stacks each have eight rolls and are equipped with Lodding Engineering Corp. oscillating doctors. (Dryer doctors were also supplied by Lodding.)

A specially-constructed Hydrapulper is located below the machine floor operating level and directly beneath the calender stacks. Fed into this Hydrapulper is broke from the dryers, calender stacks and reel as well as all winder shavings. Broke and shavings are slushed and pumped back into the stock preparation system. The pulper operation—including consistency regulation—is entirely automatic.

No. 4 is equipped with a Rice Barton uniform-speed reel of the horizontal type. The reel drum measures 42 in. in diameter and is designed to wind 60-in. paper. In Chillicothe's regular machine finish this roll would weigh approximately 10,000 lb. Rice Barton also supplied the new rewinder. Its 188-in. face drums are 18 in. in diameter.

Featured in this phase of the Chillicothe installation is a Rice Barton shaft puller. Consisting of a hydraulically-operated lift table, a roll ejector and a shaft-pulling mechanism, the unit is located immediately after the rewinder.

New Belting Development

A relatively new plastic belting material has been used practically throughout the machine installation. Supplied by J. E. Rhoads & Sons Co., the material—known as Tanastic—has a stretch-free nylon core that is said to provide the ideal combination of strength and elasticity with no belt adjustments. The belts range in width from 2 to 5 in., the widest being used on the heaviest drives: the calenders and the wire section. The dryer drives are equipped with 4½-in. belting, the first and second press with 3-in. and the breaker rolls and smoothing press with 2-in. Tanastic permits faster driven speeds and a wide variety of speed changes while measuring only about one-third the width of conventional leather or rubber belting.

Drying on No. 4 is controlled by a Stamm system in the first and second dryer sections. Stamm equipment is also applied on the third section to control the drying regardless of machine speeds or the caliper of the paper being produced. All instrumentation controls—including machine starting and stopping, the doctor oscillating controls and the hydraulic loading of presses and calenders—are supervised from machine aisles consoles.

Very little fresh water is used in the machine's white water system. Make-up water is added by liquid level

control in a seal water tank that collects seal water from the machine's vacuum pump, as well as cooling water used at the various hydraulic pumps. This collected seal water is used in the De Zurik Corp. high-pressure showers in the Fourdrinier section. All machine white water is passed through the Dorr-Oliver saveall.

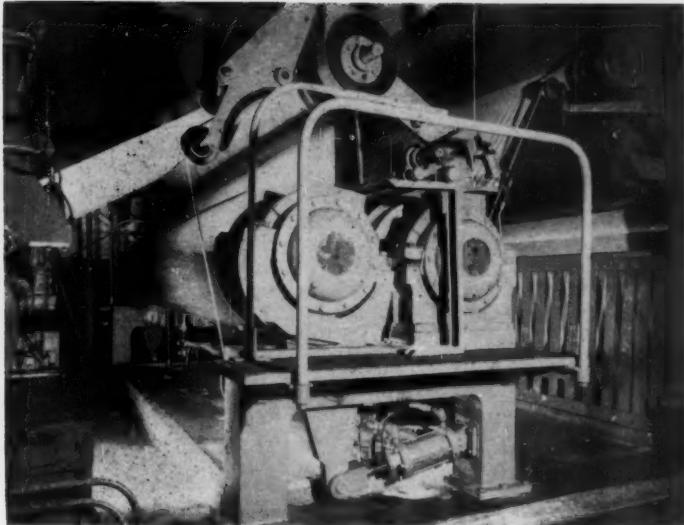
Machine and Winder Drives

The main motor drive for the new Chillicothe machine—designed to operate over a speed range of 150 to 1,000 fpm—was supplied by Reliance Electric & Engineering Co., as were the supporting motor-generator set and the necessary drive control system.

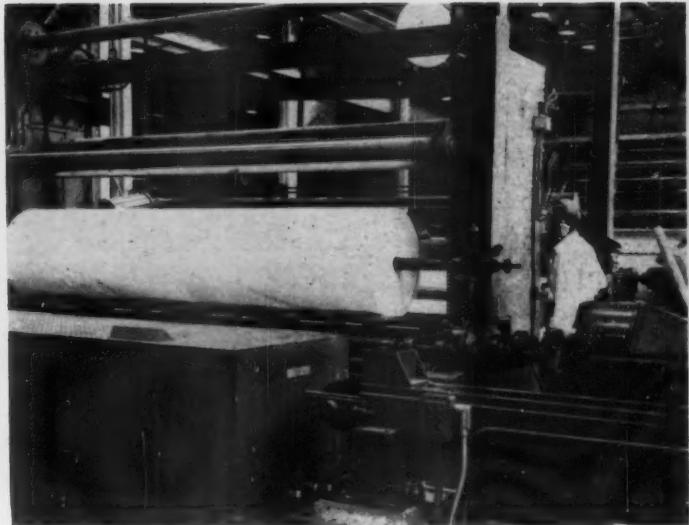
A double-shaft extension on the 900-hp, 450-rpm constant-torque main drive motor couples directly into the machine line shaft to conserve space and eliminate the necessity for right-angle gear units.

The motor-generator set consists of three units: a 750-kw generator, a 15-kw self-excited generator and a 1,250-hp synchronous motor. The latter is equipped with a part-winding starter to prevent the overloading of power lines during start-up.

The drive system has two tachometer generators—one to provide a feedback signal to the VSMR electronic regulator controlling the speed of the drive motor, the other to supply information to indicators and recorders



HORIZONTAL SIZE PRESS (Rice Barton) dividing the second and third dryer sections. The rolls are of 32-in. dia. with face widths of 183 in.



REWINDER with Reliance Electric & Engineering drive unloads onto a D. J. Murray roll table. Mr. Taylor watches the operation.

on the operator's panel.

The centrally-located floor-mounted control panel for the drive system is of open construction for easy accessibility. On it are mounted a dual-circuit VSMR electronic regulator for over-all speed control and all other necessary control devices for a coordinated and integrated system.

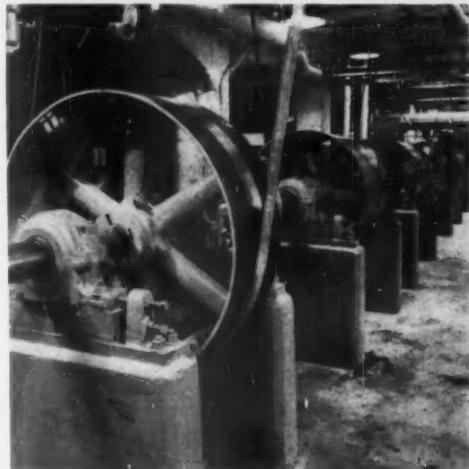
A timed reference voltage supply permits smooth starting and acceleration to a pre-selected line speed.

Similar Reliance Electric & Engineering drive and control systems are also installed on the Rice Barton winder (designed for a maximum speed of 3,500 fpm), the two-drum rewinder, the slitter and unwind stand.

Other Reliance drives power the dandy roll, the saveall, shake and headbox.

Other Major Suppliers

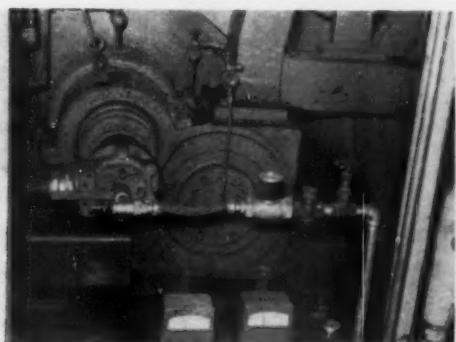
Suppliers to the Chillicothe project in addition to those listed above included: Stebbins Engineering & Mfg. Co. (tile chest tanks); Jeffrey Mfg. Co. (conveyors); Goulds Pumps Inc., Ingersoll-Rand Co. and Allis-Chalmers Mfg. Co. (pumps); General Electric Co. (motors, switchgear and transformers); Bauer Bros. Co. (stock cleaning equipment); Nash Engineering Co. (vacuum pumps); Improved Machinery Inc. and Mixing Equipment Co. Inc. (agitators), and selectifier screens (Black-Clawson Co., Shartle Div.).

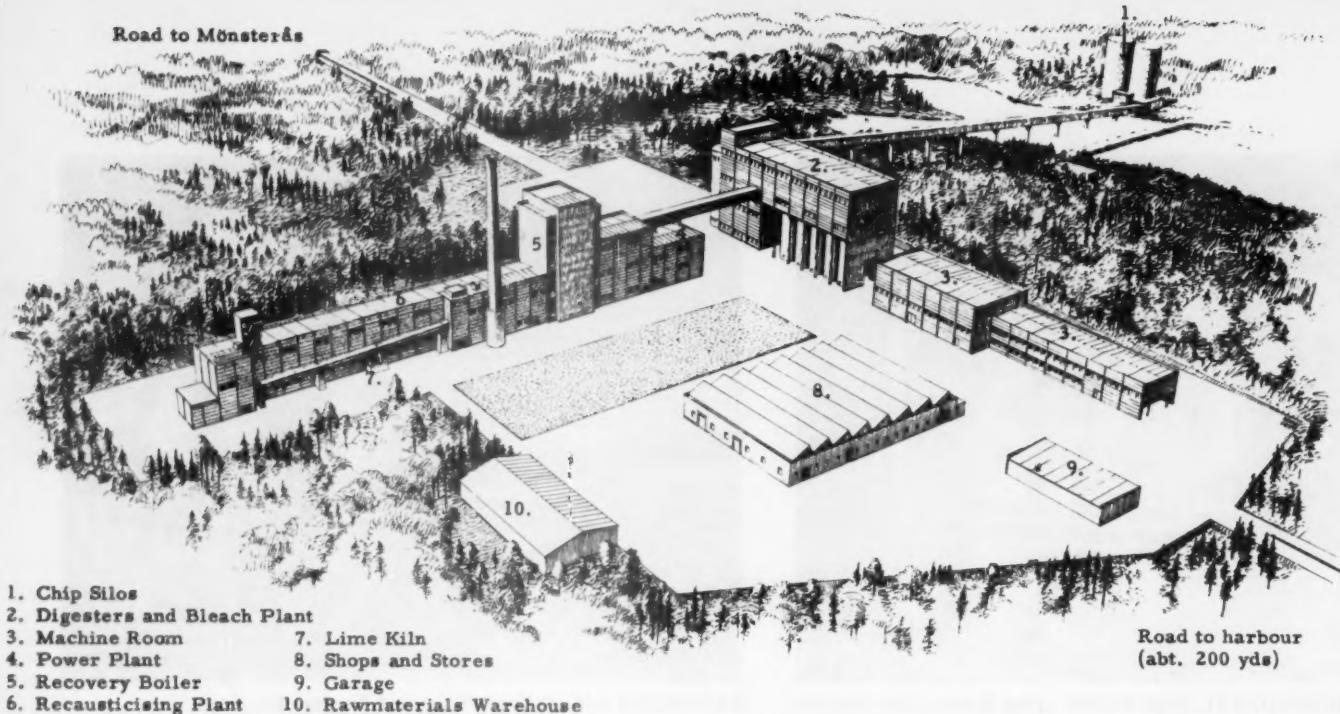


LINESHAFT OF NO. 4 is driven by Tanastic belting. The leather/plastic material has a stretch-free nylon core and is about a third the width of conventional belting.

COMPACT WORM GEAR DRIVE, made by Cleveland Worm & Gear Co., is less noisy, permits easy access to back side of driers, allows for better air circulation.

ROW OF LINK-BELT PIV CONTROLLERS on the mezzanine floor is checked by Jack Hughes, plant instrument man. An integral part of the installation is a Trimble Machines metering system.





1. Chip Silos
 2. Digesters and Bleach Plant
 3. Machine Room
 4. Power Plant
 5. Recovery Boiler
 6. Recausticising Plant
 7. Lime Kiln
 8. Shops and Stores
 9. Garage
 10. Rawmaterials Warehouse

Road to harbour
 (abt. 200 yds)

NEW MILL IN SOUTH SWEDEN introduces outside storage silos and bleach towers to that country

2 Pulps Continuously Made

in a new and unusual mill which is owned by 60,000 Swedish private forest owners and their associations

—Monsterås, Sweden
 • When a young engineer undertook to build a sulfate market pulp mill in Sweden in 18 months, there were some skeptics. But the engineer, Rutger Martin-Löf, managing director of the company, had some good ideas not only to speed erection time, but also to make it one of the outstanding mills of its time.

As this new mill, Skogsägarnas Cellulosa AB (Forest Owners' Cellulose Corp.), gets underway, here are some of its features:

Probably the most interesting aspect of Forest Owners is that it is owned by some 60,000 private forest owners and their associations. These are the Sveriges Lantbruksförbund, SL (Federation of Swedish Farmers' Associations), and the Riksförbundet Landsbygdens Folk, RLK (Swedish Farmers' Union). These groups represent the majority of forest-owning farmers in Sweden from Norrland to south Sweden.

At the command of this group are some 15 million acres (6,728,000 hectares) of good forest lands with an annual increment of 16.4 million cu. meters. Unusual for a Swedish mill is that up to 80% of the wood will

be trucked to the mill on a continuous year-round basis. About 15% to 20% will be rafted by sea.

The southeast region of Sweden enjoys a mild winter, has a surplus of good timber, year-round ice-free harbors and is close to the Continent. This is where the new mill is located, at Monsterås on the Em River. Harbor and docking facilities have been installed to serve ships of 24-ft. draught, will be able to load ships up to 8,000-9,000 tons d.w.

Some Unusual Features

Initial capacity of the mill is 75,000

metric tons, with provisions for an ultimate capacity of 150,000 tons. The mill will produce The Key Brand of unbleached and semi-bleached kraft; the latter will be available in three brightnesses: 60 GE, 70 and 75. This facility to provide a choice of brightness is said to be unusual.

Two Kamyr continuous digesters, each with a capacity of five tons/hr. on a 4-hour cooking time, will produce two different types of pulp. This is said to be the first such installation. Also of interest is that, for the first time in a Swedish mill, closed circuit television will be used.



RUTGER MARTIN-LOF is president and managing director, Skogsägarnas Cellulosa AB; FRITZ HEDBORG (right) is mill manager.

The mill draws its very pure water supply through a 3-mile-long pipeline from the Em River, world famous for its salmon and trout fishing. Special precautions have been taken to make sure that there will be no harm to the fish. A 42-meter (140-ft.) diameter settling pond will be used for effluent before water is pumped through another 3-mile-long pipeline out into the Baltic Sea.

An innovation for Swedish pulp mills is the location of the pulp storage silos and bleach towers outside the digester house. This is due to the mild winter climate at Monstera.

Personnel and Sales

Gunnar Hedlund is chairman of the National Federation of Swedish Forest Owners' Assn., and also chairman of the Forest Owners' Cellulose Corp. I. Grundh is accountant, O. Linell is chief purchasing agent, Fritz Hedborg, an experienced engineer, is mill manager, and supervised the construction and erection of the mill, under the direction of Mr. Martin-Löf. C. G. Mikaelsson heads the drawing office and workshops. Production superintendent is E. Carlhamn and L. Hall is chief chemist.

Sales representatives are:

France: Nordin Cellulose, 11 Blvd. Malesherbes, Paris 8; Germany: Nordanische Holzprodukt-Gesellschaft, Chilehaus A, Hamburg 1; Great Britain: Timber, Pulp & Paper Sales Ltd., City Wall House, Chiswell St., London, E.C. 1; Italy: Sylvander & Cie, Via Durini 26, Milano; Netherlands: Tamboer & Co. N.V., Haarlem; Switzerland: Erland O. Björn, St. Alban-Anlage 16, Basel; Argentina: Percy von Schoultz & Co. AB, Strandvägen 5A, Stockholm O; U.S.A., Canada, Mexico and Cuba: Bulkley, Dunton Pulp Co., Inc., 295 Madison Ave., New York 17, New York.

Flow Description of Unusual New Mill

Which Offers Three "Brightnesses"

Wood Handling . . . Comes Barked

An overhead crane with sling attachments will unload wood trucks at the Skogsagarnas mill. Following a trend in Sweden, most of the wood will be debarked in the forests. Barked logs, in 6-ft. and 12-ft. lengths, are unloaded onto a transport table delivering to a flume which carries the logs to a roller conveyor feeding the chipper. The conveying and feeding systems were designed and delivered by Stig O. Grafstrom, Harnosand, Sweden.

Rough wood is moved by conveyor to the Cambio barkers where logs are processed end-to-end at a speed up to 140 ft./min. Barked logs go to a flume. Logs are chipped in a Karlstads Mekaniska Werkstad (KMW) 10-knife chipper, driven by a 550 hp, 6,000 volt motor. Logs up to 20-in. diameter can be handled. Chips are sorted in four KMW screens and acceptances are carried by a belt conveyor to two chip silos.

Pulping . . . New Cold Blowing

From silo storage, a belt conveyor moves the chips to one of two silos feeding the Kamyr continuous digesters. A cell wheel measures the amount of chips as they are carried by bucket elevator to the digesters. The newly developed cold blowing process is used to produce a high yield, high strength pulp. (In this process, pressure is relieved in a chamber, giving a better yield and stronger fiber).

Two Jonsson screens ahead of the washers remove knots. Two Kamyr washers are used in series with a screw press in between. Knots are disintegrated and washed with the



TRANSPORT TABLES FEED CAMBIO BARKER.



CHIP CONVEYOR (foreground) DELIVERS CHIPS TO SILO. Second conveyor takes chips to digester house.

pulp. There are two parallel Biffar screens (Thuresson & Mörch, Sundsvall, Sweden) for each digester line. Accepted stock is thickened on Sundskonviks deckers and stored in a 700-cu. ft. capacity silo at a consistency of 6% to 8%. Rejects are screened on Ofvergard & Co. Ahlfors screens. Acceptances from these return to the Biffars.

Secondary rejects are sent to a Lortzten & Wetres Supratonator beater and pumped to two series of Bauer Centri-Cleaners. Output is either returned to the system or stored separately for making a special quality.

The pulp is diluted by nozzles in the bottom of the silo and the stock is then pumped either to the bleach

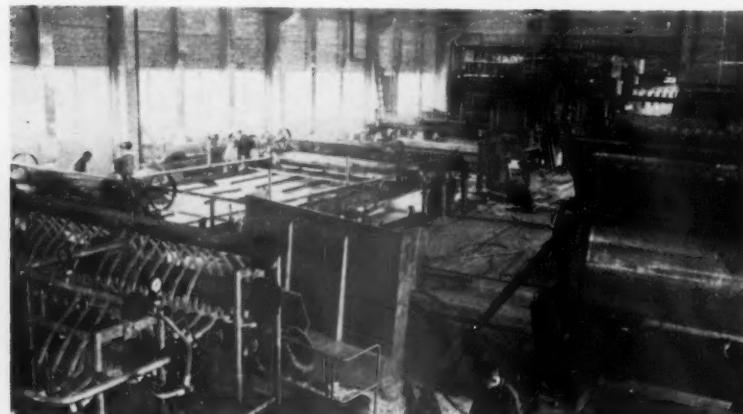
SKOGSAGARNAS



PULP MILL SHOWS UNUSUAL FEATURE of this mill—bleaching and storage towers are outside.



MAIN ROAD CUTS THROUGH MILL. At right (tall building) is digester house, then machine room and pulp storage building (right). Power and recovery are in left background, work shops to the left.



MACHINE ROOM OF NEW MILL. At left is 160 ton capacity pulp dryer; at right is 80 ton Kamyr wet machine. In left foreground, Bauer Centri-Cleaners.

plant or machine room. Present bleaching stages include chlorine, caustic extraction and two stages of hypochlorite. These will later be augmented by two chlorine dioxide stages. Kamyr upflow towers are used for all stages. Bleach liquor is continuously produced. Chlorine input is controlled by a redoxpotentiometer regulator (oxidation reduction cell).

Drying . . . Two Methods

Pulp, bleached or unbleached, can be dried to 90% or pressed to 45%. Bleached pulp is pumped to a four-stage battery of Bauer Centri-Cleaners and then goes to the machine chest. It is then pumped to a Källé consistency regulator (2.5%) and to the metering box. Stock is mixed with white water in a blending pump and is pumped to the machine vat at 1% consistency.

The Kamyr dryer is 135-in. wide, with two suction boxes and two Rota-belts. The first press is a suction press. A two-cylinder preheater is located between the second and third press. Final drying is by a new type Svenska Fläktfabriken (SF) dryer where the web is carried by air and touches only the turning rolls at the ends. The compact unit has air fans and vacuum booster for automatic threading.

Finishing . . . Fully Automatic

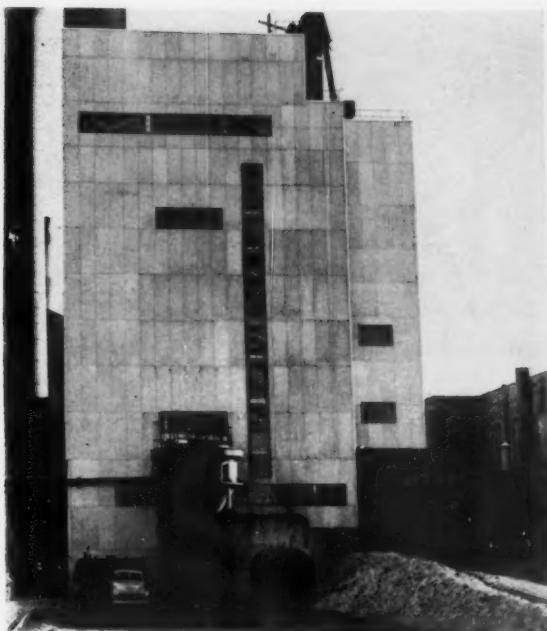
The web is sheeted on a KMW cutter and baled on a Toledo (Stockholm) automatic layboy. Weight of the bale is checked with a Toledo scale so that when the last bale at the layboy conveyor is the right weight, the conveyor moves the bale out from the layboy and it is then pressed, wrapped, strapped and stapled automatically.

Pressing and strapping equipment is by Sundsvalls Verkstäder, Sundsvall; wrapping and transportation equipment by Nordstroms Linbanor, Stockholm.

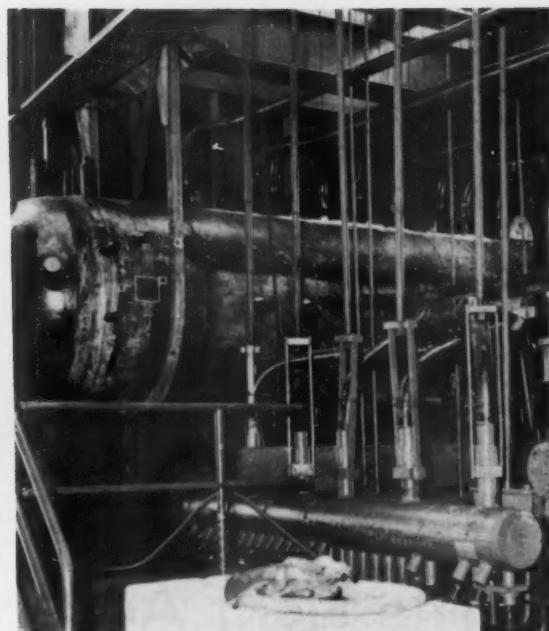
The Kamyr wet machine has a round wire, 100x100 in., equipped with three grooved press rolls. The web is cut lengthwise with motor-driven circular saws and crosswise with an ordinary cutter. A roll with suction nozzles places the sheet on a conveyor. Weight of every bale is automatically checked and the bale is pressed and strapped. The bale is taken by clamptruck to pulp storage. When loading ships, truck trains take the bales to the harbor, about 400 yards away.

The design of the mill layout was done by the company's own technical department.

Work on the mill site began on March 1, 1957. It was completed in October of 1958.



TOWERING 127 FEET into skyline is new boiler house at Rhinelander, of concrete, steel and Transite.



HANGING FROM STEEL BEAM, top drum and tube headers of boiler have no other structural connections.

Increased Power at Rhinelander

Ample power potential for possible future expansion has been provided in a \$4,500,000 modernization program at Rhinelander Paper Co., Rhinelander, Wis. Key to the project for the improvement of both steam and electric generating capacity is a Babcock & Wilcox Co. boiler of the cyclone furnace type.

Undertaken more than a year ago, this "forward step in the firm's long-range plan of modernization" included the construction of a 58 by 71 ft. building rising to a height of 127 ft.; an Infilco Co. water treatment plant, and a Westinghouse Corp. turbine generator of the extraction back-pressure type.

Because of the "rather revolutionary operations involved" in the Rhinelander installation, employees have been given extensive training under the direction of John Stieg, steam power engineer, and Walter Adamczyk, electrical engineer. The sessions included both on-the-job and classroom study.

The boiler itself has a capacity of 260,000 lb. steam per hour at 1,500 psi and 950°F. It is capable of evaporating water at a rate of 600 gpm at full capacity. Midwestern coal (264 tons daily) of a lower grade than that previously used is crushed and auto-

matically fed to the furnace. The "ash" is melted and run off as molten slag.

Water at 2,000 psi

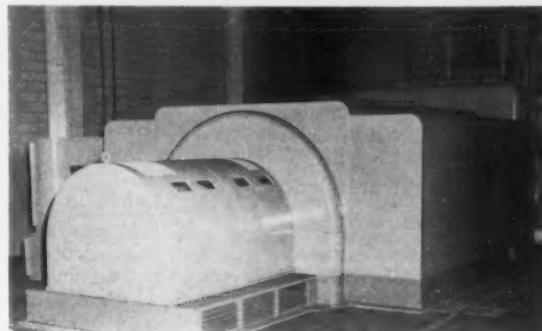
The Infilco treatment plant adjoins the boiler structure. It filters and demineralizes Wisconsin River water, which is then pumped to the boiler at 2,000 psi. One of the two feed pumps is driven by a 1,000-hp electric motor, the other by a steam turbine of the same horsepower.

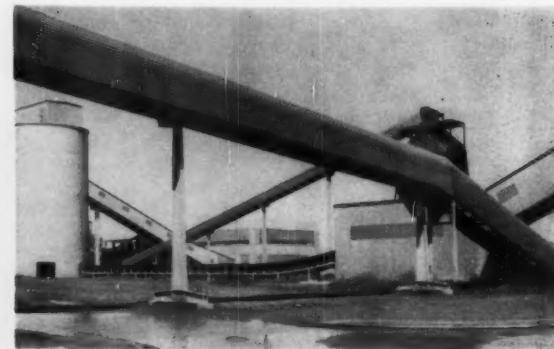
The Westinghouse turbine generator has been installed adjacent to the present turbine room. It has a rated capacity of 10,000 kw at 12,500 volts, takes steam at 1,500-lb. pressure, ex-

tracts it at 400-lb. and exhausts it at 125-lb. The 400-lb. steam is fed to the two other turbine generators, while the 125-lb. steam is used in paper and pulp processing operations.

Other major suppliers to this project at Rhinelander Paper (a division of St. Regis Paper Co.) included: Allen-Sherman-Hoff Co. (ash handling equipment); Fairfield Engineering Co. (coal elevator); Pennsylvania Crusher Div., Bath Iron Works Corp. (coal crusher); Ingersoll-Rand Co. (air compressor); Pacific Pumps Inc. (boiler feed pumps); and Wisconsin Bridge & Iron Co. (building steel). Electrical switchgear and the draft fan were supplied by Westinghouse.

TURBINE GENERATOR supplied by Westinghouse was installed adjacent to existing turbine room. It has a rated capacity of 10,000 kw at 12,500 volts.





ALUMINUM AT WORK IN A BIG WAY at a large southern mill, where (left) bleach towers utilize aluminum casing, and (above) the metal protects chip conveyor from the weather.

In The Fight Against Corrosion . . .

Many mill owners find aluminum outlasts all other structural metals, reducing maintenance costs

By R. S. DALRYMPLE
Chief Corrosion Engineer
Reynolds Metals Co.

● Corrosion of metals employed for structural components and building exteriors has long plagued the pulp and paper industry. Although not actually in contact with the process liquors, these components are subject to corrosive fumes and chemicals that, in the presence of moisture, cause considerable corrosion.

In paper mills corrosion costs many thousands of dollars per year in periodic maintenance, replacement of materials, injuries suffered when a ladder or walkway fails, in downtime with its attendant loss in production, and in the replacement of common structural materials by more costly materials. Experience has demonstrated that aluminum can be employed to overcome many of these costly maintenance problems with but little increase in original cost. The small difference between the cost of aluminum and other common structural materials is usually more than balanced by reduced labor costs and ease of handling during fabrication and installation.

Steam Removal

Removal of steam or water vapor is one of the expensive headaches encountered in the operation of a paper mill. If moisture is allowed to escape

into the building proper, it condenses onto the sidewalls and roof sections. Not only does this condition promote corrosion, but the condensate will drip onto and into the operating equipment, will get onto the paper causing marks and stains, and will get into the electrical system causing outages.

To carry off this steam, most paper mills have a complex system of hoods and ducts. Several mills recently inspected had replaced galvanized steel hoods and ducts every six to 24 months depending on their location. The aluminum paneling used for replacement has been in service for several years and is still performing satisfactorily. Except for a thin grey oxide film, it appears to be unaffected.

Many more years of service can be expected on the basis of this performance. Galvanized steel angles and fasteners were initially utilized during installation of the aluminum hoods. These non-aluminum parts have been replaced (in less than two years) because of severe rusting.

Aluminum squirrel cage blowers are also being used in these ventilating systems.

Panels in Digester Service

In one large Wisconsin paper mill galvanized siding and roofing began to rust in about six months. The trouble was traced to the presence of sulfur dioxide and moisture released

to the atmosphere during the blow-down of pulp digesters. Aluminum panels were exposed on the roof and actually over the digester stack to determine the behavior of common aluminum roofing and siding materials.

After six months, none of the aluminum alloys exhibited more than a tarnish film. The samples exposed directly over the digester stack were only slightly stained, were free of pits and from a viewing distance of 3 ft. appeared as if new.

Embossed siding in this test picked up considerably more dirt on horizontal surfaces during the test. Consequently, it was recommended that the customer employ mill-finish corrugated sheet for his current building program. Alloys 3003, 5005 and alclad 3004 are suitable. If the roofing or siding is to be exposed to corrosive plant conditions as well as to the atmosphere, then alclad 3004 is generally recommended. Structural members formed in alloys 6063 and 6061 are considered satisfactory for this service. The importance of proper design will be discussed later.

Aluminum is being used for construction of log flumes and chip chutes and conveyors, effecting savings over the steel chutes formerly used. Aluminum was at first thought to lack sufficient abrasion resistance for this service until it was learned that steel failed by the combined effects of cor-

rosion and abrasion, not from abrasion alone. Aluminum flumes and chutes are not subject to as much corrosion as steel under the conditions of service and also exhibit excellent abrasion resistance. The long life of the aluminum equipment and the attendant reduction in downtime result in important savings. Furthermore, the aluminum equipment is light in weight and can be more easily moved. This means fewer man-hours.

Recent Mill Applications

At a large paper mill in northern Michigan several new uses of aluminum were investigated.

This plant has its own boiler and electrical generation systems. The original divider plates and hoppers in the coal-handling system corroded so badly that they had to be replaced after three to six months' service. On a test basis, the $\frac{1}{4}$ -in. coal divider plates were replaced with $\frac{1}{4}$ -in. plates of alloy 6061-T6 aluminum. These plates were in use for 28 months, handling an average of 175 tons of coal per day before sufficient wear occurred to necessitate their replacement. This mill has since lined or replaced the hopper cones in the boiler house with aluminum. For this service alloys 5050, 5052, 5154, 5086 or 6061-T6 are recommended.

Another use for aluminum was in the soda ash tank vent line. This equipment has been in service 24 months and is performing satisfactorily. Samples of Schedule 40 4-in. aluminum alloy 6063 pipe were placed in the hot black liquor (neutral sulfite process) line. Precautions were taken at the time of installation to prevent galvanic corrosion of the aluminum

Some Uses

The following list points out some of the more obvious applications of aluminum:

Hoods
Ventilating Ducts
Hand Rails
Walkways
Some Process Lines
Chemical Handling
Siding
Building Structural
Tank Covers
Vents and Louvers
Electrical Conduit
Woodchip Chutes
Long Chutes and Flumes
Instrument Lines
Steam Condensate Return Lines
Roofing
Electrical Cable & Bus Bar
Window Shafts
Steam Dryer Rolls
Coal Handling

Rules for Long Service:

To get the greatest service from aluminum, it is necessary to employ proper design and construction techniques:

- a) Channels and other structural sections should be placed so that moisture cannot collect. Drain holes can be drilled to carry off water when necessary.
- b) If the plant atmosphere contains dusty chemicals, eliminate as many horizontal surfaces as possible where these dusts can collect. When possible, employ corrugated material in a vertical rather than horizontal position. Vertical placement often improves the appearance of the building, too.
- c) Where steel and aluminum come in contact, coat with an inexpensive mastic or coal tar enamel.
- d) Use aluminum fasteners where possible. If ferrous metal fasteners are used, stainless steels, galvanized steel or Cadmium-plated steel should be selected. Plated steel—and especially bare steel—is often primed, then painted with an aluminum pigmented coating.
- e) Aluminum pipes must be separated from non-aluminum pipes by means of insulating gasket and bolt assemblies.
- f) Use aluminum alloys compatible with the environment. High-strength alloys of the aircraft type are usually not recommended. Clad alloys are recommended where unusually corrosive conditions are encountered.

line by inserting gaskets between the steel and aluminum.

Samples of the aluminum pipe were examined after three months and after 18 months. Pitting attack was noted at the time of the three-month examination. This did not tend to increase in depth or severity during the 18-month test. At the end of the test period, the aluminum pipe sections were in nearly the same condition as noted after three months.

In Electrical Distribution

Electrical distribution systems are subject to failure when moisture penetrates the switchgear equipment and conduits. Aluminum conduit and switchgear resist corrosion by moisture even when heavily contaminated by most chemicals. Thus, it is possible to seal the electrical gear against moisture penetration and maintain that seal since the aluminum components are most resistant to attack. Aluminum bus bar and conductor are well suited for mill applications because of their low cost, high conductivity, availability and resistance to attack.

In Chemical Processes

In some pulp mills the presence of sulfur constitutes a dual problem easily handled by aluminum. Sulfur is flammable and may explode if the dust is ignited. The non-sparking characteristics of aluminum can be employed to advantage. Furthermore, sulfur and many sulfur compounds, even at their boiling point, do not affect aluminum. By comparison, most common structural metals are rapidly attacked by sulfur and/or sulfur compounds.

On a selective basis, aluminum pipe may be employed in process chemical lines. In one mill using the neutral

sulfite process, aluminum is being used in contact with the hot liquor. Even the most concentrated black liquor failed to penetrate 6-in. Schedule 40 alloy 6063-T6 aluminum pipe in 18 months' service. Schedule 80 black iron pipe (6-in. NPS) fails in three to six months in this service.

Aluminum piping is not recommended for caustic process plants since the highly-alkaline liquor chemically dissolves aluminum. Nonetheless, waste liquors from both caustic and neutral process plants are sometimes handled in aluminum irrigation piping, since it is so light one man can move it from one waste field to another.

Although no corrosion problem is involved, winder shafts have been made from aluminum. The obvious advantage is weight. One man can handle an aluminum winder shaft, whereas two men (and usually a pulley assembly) are required to place a steel shaft in the take-up mechanism.

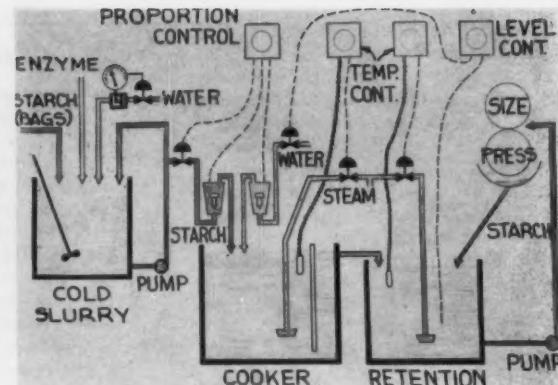
The behavior of aluminum in industrial environments has been studied in detail, and there are a number of excellent publications dealing with the corrosion behavior of aluminum and other metals in various atmospheric conditions.

References

- (1) "Symposium of Atmospheric Corrosion of Non-Ferrous Metals", ASTM Special Tech. Pub. #175 (1955).
- (2) "Resistance of Aluminum Alloys to Weathering", C. J. Walten, D. O. Sprowls and J. H. Nock Jr., Corrosion, Oct. 1953.
- (3) "Resistance of Aluminum Alloys to Chemically Contaminated Atmospheres", W. W. Binger, R. N. Wagner and R. H. Brown, Corrosion, Dec., 1953.
- (4) Hugh P. Goddard, "The Atmospheric Corrosion of Architectural Metal", Engineering Inst. of Canada, July, 1953.



PAPERMAKING PANELISTS FEATURE new developments at the TAPPI session in Longview (l to r) D. D. Wilma, Longview Fibre Co.; Jack Decker, Columbia River Paper Mills; John T. Bainbridge, Penick & Ford Ltd.; moderator Jack Weiblen, Columbia River Paper.



DIAGRAMATIC LAYOUT for continuous starch conversion enabling Longview Fibre Co. to run higher, more consistent mullen and increase machine speed around 10% while decreasing additive costs. Water-to-slurry proportion is maintained regardless of flow rate.

Starch Conversion at Longview

White water clarification at Columbia River and surface treating discussed by Pacific Coast TAPPI

Confronted with the problem of getting more starch into the sheet on No. 6 machine in order to develop higher mullen, Longview Fibre Co. has gone to in-mill starch conversion at its Longview, Wash. plant. Despite early study indications "that the successful way was to cook and convert batch-wise," according to D. D. Wilma, asst. paper mill supt., effort was made to adapt the existing semi-continuous system to continuous converting.

Results achieved by the continuous system, as reported by Mr. Wilma at a recent Pacific Coast TAPPI meeting, "We are able to run a higher, more consistent mullen, and this enables us to increase our machine speed. On 70-lb. liner, for example, we increased production about 10% on a speed basis alone—not to mention the saving on production formerly culled for low mullen. Additive costs have actually decreased. Although we add more starch than previously, and now also have the enzyme expense, our cost diminished because the improved mullen allows a decrease in wet-end additives more than offsetting the increase in dry-end additives."

He reports mixing starch as a cold slurry in a 500-gal. tank and continuously pumping through a meter to the

cooker. Water is continuously added to the cooker, the backtender setting the water-to-slurry proportion via control panel instrumentation. Once set, this proportion is maintained regardless of flow rate.

Cooked starch overflows from the cooker into storage. Both the cooker and storage tank are steam heated and equipped with automatic temperature controls. Pumps deliver the starch from storage to the size press for application, the excess returning to storage.

Mr. Wilma states, "Enzyme is added to the cold slurry, the amount varying from 0.05 to 0.4% with 0.1 to 0.2 being the usual percentage. Viscosity and concentration determine the amount of enzyme. We do not measure the viscosity, but instead watch starch performance on the calender or size press." He points out that the backtenders can usually tell whether or not the viscosity is right. The plant's rule of thumb: Increase the enzyme proportion as concentration increases.

No attention is required concerning the converting pH "as we use buffered starches," states Mr. Wilma. "Potato starch, we find, is naturally in a favorable converting range, and our milo is buffered to proper pH."

Cooking, converting and storage are all carried out at 180°F. In case of machine stoppage, the temperature is immediately elevated to 205° in cooker and storage for several minutes duration to stop conversion. No facilities



BRUCE JOHNSON, public relations director for Rayonier Inc., Seattle, urges industry to be alert in political affairs. Those involved in politics before election, he said, become active in government after. Mr. Johnson attributes labor's gains in this field to willingness on the part of individuals to serve as practical politicians. Unless similar willingness is shown by other groups, only labor views will be considered in government.

are provided to otherwise stop conversion.

Columbia River Paper Mills improves white water clarification at the firm's Vancouver, Wash. plant by using two separate applications of specialty flocculants. These are being used independent of each other to accomplish significant savings, according to Jack Decker, chief chemist, who addressed the Longview meeting. As to what might be achieved by combinations of the two, he says this has not yet been ascertained but might result in even more efficiency.

By working out a successful application program, the company reduced the loading of stock delivered to the machine wire through the addition of Separan 2610 (Dow Chemical Co.). This resulted in a 40% filler reduction in the manufacture of highly filled sheets. Used here mainly for wire retention—especially for retaining titanium dioxide, Separan is aspirator dispersed into a mixing chamber of 2-hr. retention. The concentrate solution is metered to a dilution chamber and subsequently delivered to the headbox header. Dispersal into the stock is through a perforated pipe located at the center of the header. The Separan, now used on all three machines, is added at the rate of 0.3 lb. per ton of pulp.

The resultant loading reduction on the machine cuts white water solids, estimated at around 40% in the manufacture of offset and duplicator grades.

The other phase of Columbia River Paper's white water improvement involves the use of sodium silicate (Philadelphia Quartz Co. converted to a sol by a WT Silactor (Wallace & Tiernan, Inc.) and the resultant sol added to white water immediately ahead of the saveall. Used mainly for white water clarification, the consumption of silicate runs 1.5 gal. per ton of pulp. Mr. Decker reports this results in 95% recovery of effluent solids in the production of duplicator paper.

The silicate is metered to a mixing chamber of the Silactor and there dispersed with water and then combined with water-dissolved chlorine.

Apply a hot unpigmented solution to increase paper or paperboard strength, according to John T. Bainbridge, asst. mgr. of Penick & Ford Ltd. Inc. This solution should be fluid enough to penetrate but consist of derivatized starch having enough film strength to effectively bond the fibers.

Mr. Bainbridge says, "Excellent gloss ink printing can be obtained by use of starch hydroxy ethyl ethers, sometimes blended with a small amount of gum. The starch ether-soap complex is used for improved surface characteristics, less loss in brightness,

control of surface friction, increased water resistance and ink holdout."

Pigmented coatings are being applied at the wet end of the paper machine, at size press and at the calender stacks. When applying such coatings to replace clear solutions, cautions Mr. Bainbridge, provision must be made for a lower strength improvement than can be expected of pigmented coatings. Here a high adhesive-to-pigment ratio is desirable.

"Water-resistant coatings are desirable on offset coated papers when the coat weight is more than 4 lb. per ream. Size press application of coatings

offers ideal conditions for water resistance to be obtained by urea or melamine formaldehyde resins. Water resistance can also be imparted by the addition of wax and the synthetic resin emulsions. The starch hydroxy ethyl ethers and other derivatized starches are being used very extensively in the surface treatment of paper and paperboard due to their improved film strength, film clarity, high bound water content, resistance to biological spoilage, increased reactivity with resins and, particularly, the decreased setback and reduced tendency to jell which these products exhibit."

Uses New Equipment to Strap 1-Ton Skids

To strap bulky, one ton skids of sheet paper, the Cornwall, Ont., Division of Howard Smith Paper Mills Ltd., uses a new fully powered combination steelstrapper suspended from an overhead monorail tool mount.

The new A4 Pneumatic Steelstrapper combines all three steps in strapping, (tensioning, sealing and cutting) into a single tool and provides pneumatic power for all operations. The tool works by controls on the handle.

The E45AO Overhead Mount is a low cost, overhead mobile suspension unit designed to give a large amount of floor coverage with a simple overhead rail system. It covers a floor area as long as the supporting rail and as far to either side of the rail as the length of the arm supporting the tool. Little effort is required to raise or lower the tool since the supporting arm is counterbalanced.

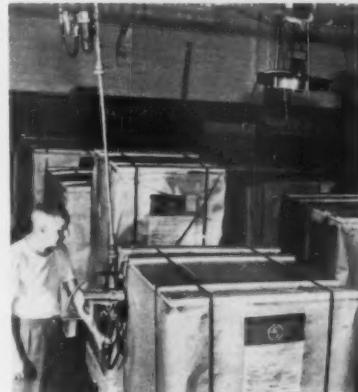
The air line for the pneumatic tool runs inside the pipe out of the operator's way. A new E33 Steelstrap Dispenser is suspended from the mount, an idea which Howard Smith mill engineers originated.

Stacked skids of paper are brought to the strapping area. The average weight of the skids is approximately one ton. The skid load is wrapped with waterproof paper and a wood cover is put in place.

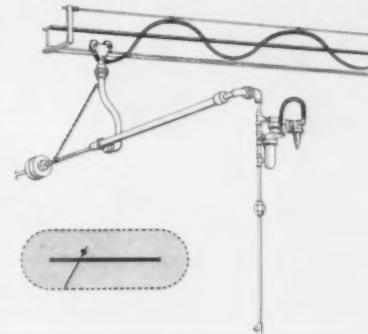
Two lengths of steel strapping are tensioned and sealed around the package about nine inches from each side. Two more straps are placed at right angles to the first two, tensioned and sealed.

The A4 Steelstrapper is equipped with a two way bracket which allows the operator to use the tool on the sides of high skids or on the top of low skids with equal ease.

The securely strapped skids are then taken to the shipping docks by powered dolly.



AT HOWARD SMITH MILLS, the Acme Steel A4 pneumatic steelstrapper is used on the side of the package. Tensioning, sealing and cutting is combined in single tool.



CAN BE TURNED IN COMPLETE CIRCLE from center pivot point as shown in inset diagram (lower left). This Acme Steel E45AO Overhead Mount, used by Howard Smith Paper Mills Ltd., with A4 Pneumatic Steelstrapper, has a ball joint to make removal of the tool from strapping easy. The E45AO Overhead Mount covers a floor area as long as the supporting rail and about as far to either side of the rail as the length of the arm.



New Products— One of Industry's Great Needs Today

How Weyerhaeuser Timber Co. goes
about making use of the whole tree

1. ". . . to Create More Products"

Dr. WINTON I. PATNODE (left), Weyerhaeuser's director of research, and J. R. ROBERTS, manager, Technical Center, Longview, Wash., say that wood's utility appears limitless. Current projects include new wood particle boards, expanded markets for bark and bark derivatives, more uses for whole-wood Silvaceal fibers, new types of hardboards, lumber, insulation board, and molded whole-wood fiber products.

2. Study Douglas Fir Chemical

(Left to right) DR. DAVID BRINK, chief of chemistry section, DR. STAN GREGORY, manager of applied research, Weyerhaeuser's Technical Center, and SENSOR RYAN, chemist, study diagram of Quercetin. The chemists literally take wood apart and put it back together again. They treat wood fiber with numerous chemical additives. They fractionate bark and analyze each of its components. Wood pieces and fibers are boiled, steamed, dried, baked, burned, humidified, etc.

If you've ever wondered what to do with those tag-end slivers of soap that clutter up the bathroom sink, you have something in common with the scientists and product engineers at Weyerhaeuser Timber Co.'s Development Center in Longview, Wash. Instead of soap, residual material from the company's forests, saw and pulp mills provides the challenge—and here's how they meet it.

3. Will It Sell at a Profit?

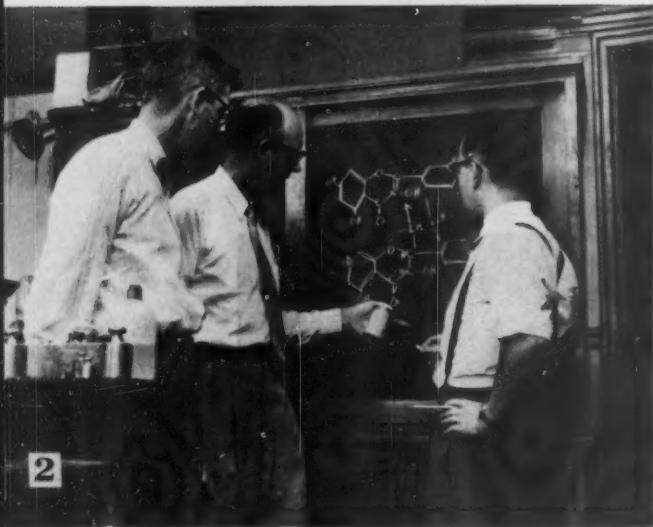
Product engineer ROBERT LEWIS (left) and PHILIP CARON, chief of derived products section, Technical Center, study potential markets for new products, in this case a baby chair molded from Silvavoy whole-wood fiber. Ideas for new products come from many sources. If approved by key people, a technical group goes to work on it. Knowledge gathered by technologists is then turned over to product development group. Much current emphasis is in developing new markets for specialized particle boards.

4. Pilot Plant Develops Product

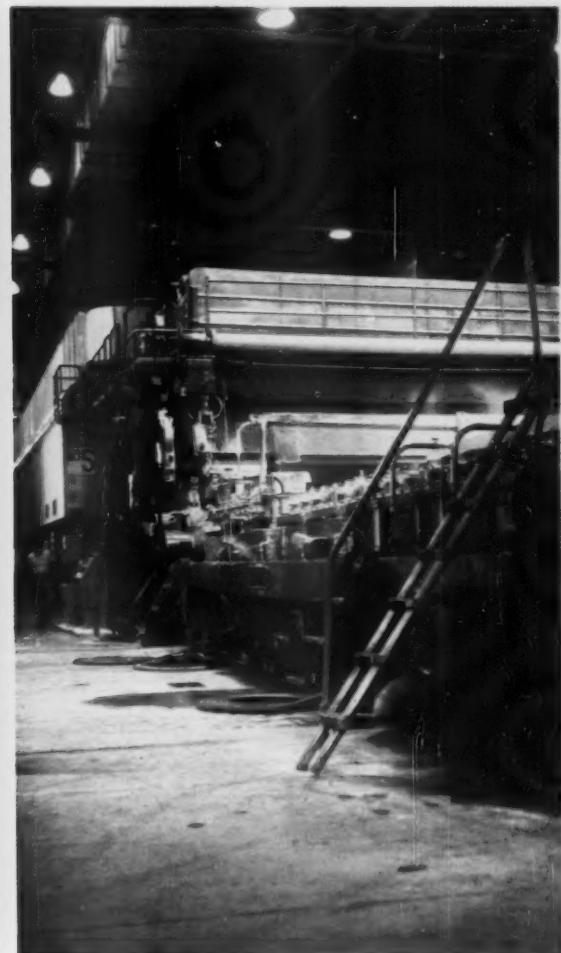
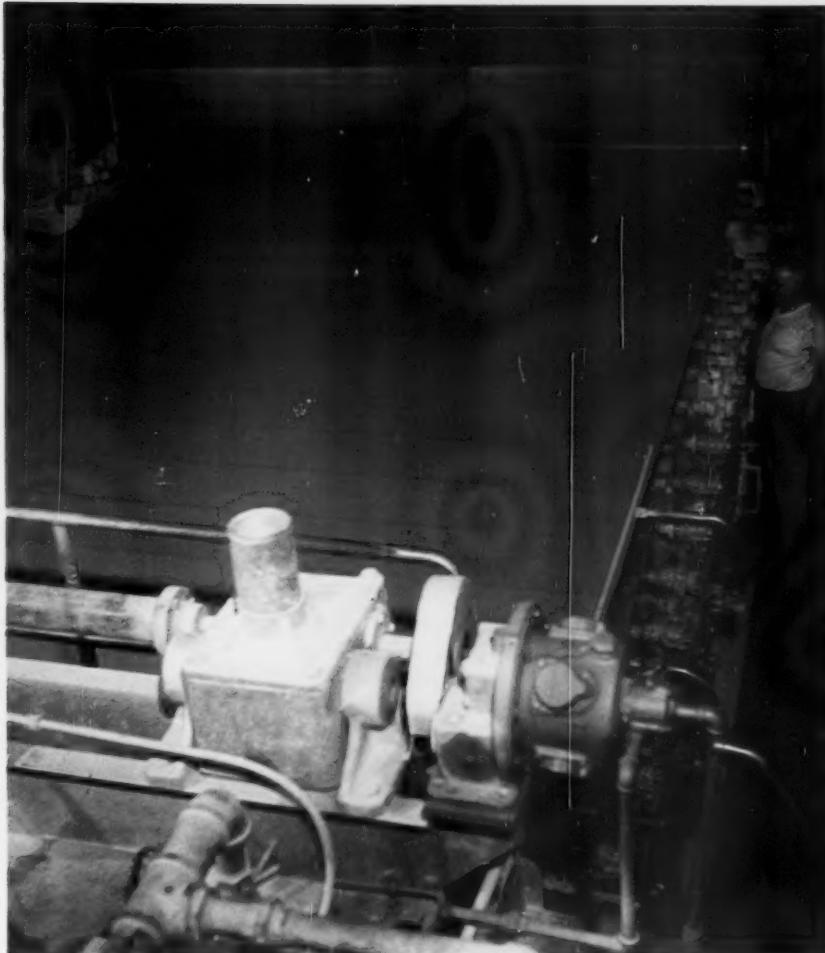
Technician GENE GROVE removes baby chair from molding press in Development Center pilot plant in Longview, Wash. After product engineers find conditions are favorable for new product, it enters pilot plant which is designed, constructed and maintained by Center's mechanical and chemical engineers. Output is shipped as samples to prospective commercial-scale customers.

5. He Helped Develop Center

Recently retired as director of development, CLARK C. HERITAGE has devoted more than 40 years to expanding the usefulness of wood. He says, "We must be able to use residuals of any size, shape or quality, be they defective trees in the forest or sawdust in a mill. Fiber and chemicals have done some of the job, and they have the potential to do it all." He has established his own office to serve industry in management of research and development.



DRAMATIC MOMENTS IN PAPER-MAKING PROGRESS



Completely new or completely rebuilt, the first production run on a paper-making machine is an exciting event to everyone concerned. To Fraser Paper, Ltd., owner of this rebuilt Fourdrinier machine, the speed of its first run (1500 f.p.m.) and its faultless operation are deeply satisfying.

To Pusey and Jones of Wilmington, Delaware, who did the work, the event is no less important. A completely new Fourdrinier with 228-inch-wide wire 100 feet long was installed, after pre-assembly at the Pusey and Jones plant. A vacuum pickup and an after-dryer section with completely enclosed gearing were added. The entire machine, from headbox to reel, was carefully inspected and parts replaced whenever necessary.

Pusey and Jones can serve you, too, by rebuilding your present machine, designing and building a new one, or by supplying such devices as an Automatic Air Guide System or a Differential Hydraulic Drive.

Left, Above: Wire width of rebuilt machine is 228 inches, wire length, 100 ft. Machine is in Fraser Paper's mill at Madawaska, Maine.

Right, Above: Overall view of 2000 f.p.m. machine which was completely rebuilt by Pusey and Jones for Fraser Paper, Ltd.



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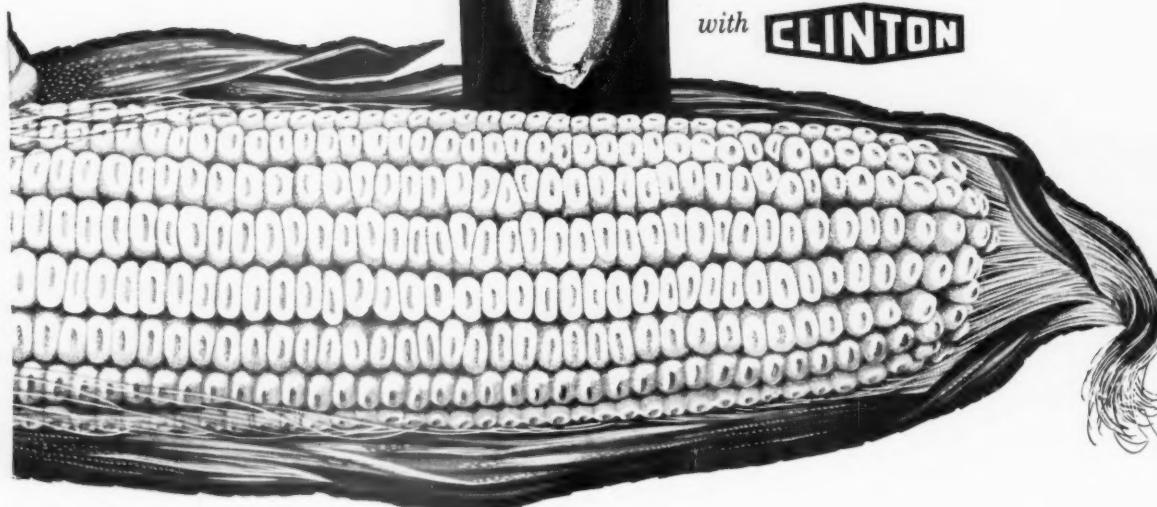
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you can do it better
with **CLINTON***





Top left, Windsor Mills, Quebec
Below, Cornwall, Ontario
Bottom, Donnacona, Quebec.



*these mills
may look
like other mills...*

*...but the pulp
they produce
is special*



Here are three paper mills. They demonstrate Howard Smith's ability to produce, in quantity. What they do not demonstrate is the *quality* of that production. Only the pulp itself can do that. And it does.

Take, for instance, "Seagull" bleached soda pulp. Howard Smith recently completed a new \$3,500,000 chlorine dioxide bleaching installation at the Cornwall mill to increase substantially the brightness of this top quality pulp. Howard Smith is a progressive company, much experienced and superbly equipped, and the pulp that you buy from them proves it.

Howard Smith

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Howard Smith makes and markets these quality pulps:

"Seagull" Bleached Soda Pulp
"Stormont" Bleached Sulphite
"Donnacona" Unbleached Sulphite
"Windsor" Unbleached Kraft

There's a SPECIFIC GRADE OF



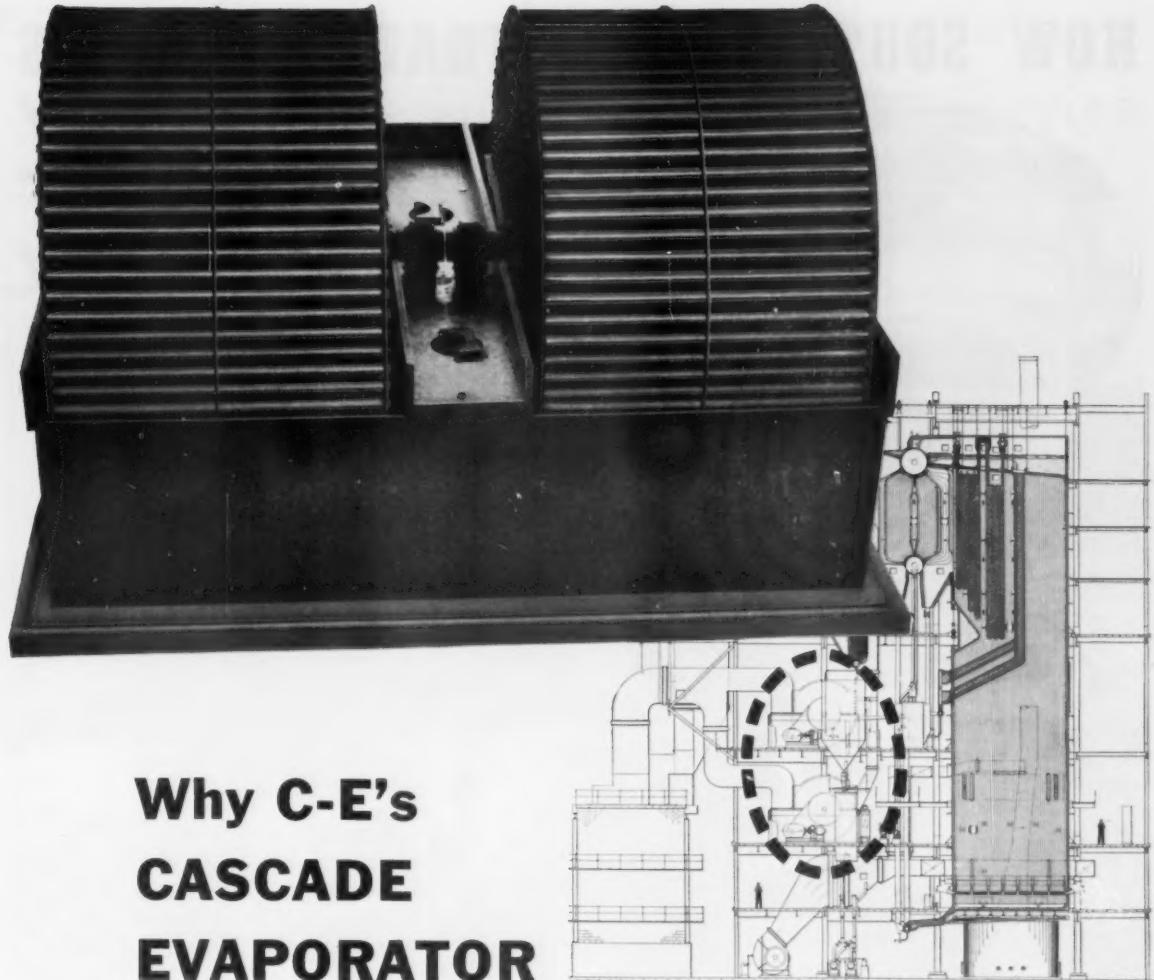
CLAY

FOR SPECIFIC PAPER MILL APPLICATIONS

GK GRADES	PROPERTIES	APPLICATIONS	EFFECTS
PREMAX	Highest Brightness. Very Fine Particle Size. Specially Fractionated for Low Adhesive Demand. (Predispersed or Non-Dispersed)	Off-machine Coaters. Machine Coaters. Size Press. Calender Stack. High Brightness Filler. Inexpensive Pigment Extender.	Highest Uniform Gloss. Maximum Opacity, Gloss Ink and Varnish Holdout.
PREMIER	Fine Fraction. High Brightness. Specially Prepared from Selected Crudes. (Predispersed or Non-Dispersed)	Off-machine Coaters. Machine Coaters. Size Press. Calender Stack. High Brightness Filler.	Coatings of Excellent Gloss and Brightness. Smooth Surface for Uniform Ink Receptivity.
KCS SMC 282	Special Fraction Carefully Prepared for Low Viscosity and Freedom from Coarse Particles. (Predispersed or Non-Dispersed)	High-Solids Machine Coating. Medium-Finish Label. Low-Cost Enamels. High-Grade Publication. Size Press. Off-machine Coaters.	Level Surface Improves: Gloss Brightness Opacity Printability
WP SUPERWHITE STANDARD WATER-WASHED	High Uniform Color. Specially Fractionated. Waterwashed and Degritted	Low Cost, Uniform, High Brightness Wet End Filler. Acid Flocced for Maximum Retention. Very Low Abrasion Number.	Lowers Furnish Cost While Improving Brightness, Print- ability and Opacity.
STANDARD AIR-FLOATED	Selectively Mined and Blended for Maximum Color Uniformity. Airwashed for Minimum Residue.	Lowest Cost Uniform Filler for Wet End Use. Low Abrasion Number.	Aids Brightness, Uniformity, Printability and Opacity.

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Why C-E's CASCADE EVAPORATOR is the choice of leaders for black liquor recovery

Here are eight reasons why the Tubular Cascade Evaporator has long been favored in progressive pulp mill practice . . . why it is today the most widely used direct contact evaporator in chemical recovery systems:

- highest liquor concentration
- highest availability
- highest evaporative efficiency
- lowest power consumption
- lowest chemical losses
- lowest maintenance requirements
- widest load range
- best self-cleaning properties

C-E now has exclusive sales and manufacturing rights to the Tubular Cascade Evaporator which has already been specified for use in more than 120 recovery units. Of the total number sold, more than 50% represent repeat orders . . . an impressive testimonial to the satisfaction of their owners and operators.

Combustion will welcome your inquiries about the Cascade Evaporator — whether a new recovery unit or an existing installation is concerned. For more information, contact our *Paper Mill Division*.

COMBUSTION ENGINEERING

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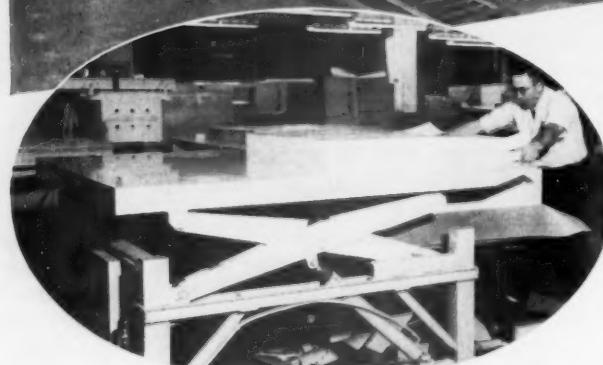
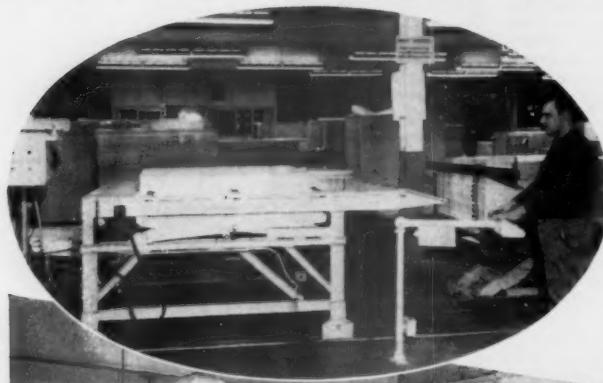


C-175

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE

HOW SOUTHWORTH STRADDLE TABLES*

*increased
production
AT
CONSOLIDATED*



Photos Courtesy Consolidated Water Power & Paper Co.

The highly mechanized layout illustrated actually increased trimmer output by 150% . . . for by its simplification the feeding of untrimmed paper and the piling of trimmed paper were expedited, enabling the trimmer to operate nearer to capacity.

This is another typical example of how a Southworth installation aids in cost reduction by a better use of existing facilities, by minimizing waste through better handling and by the improvement of safety conditions for the workers.

For Details Write or Call Collect:

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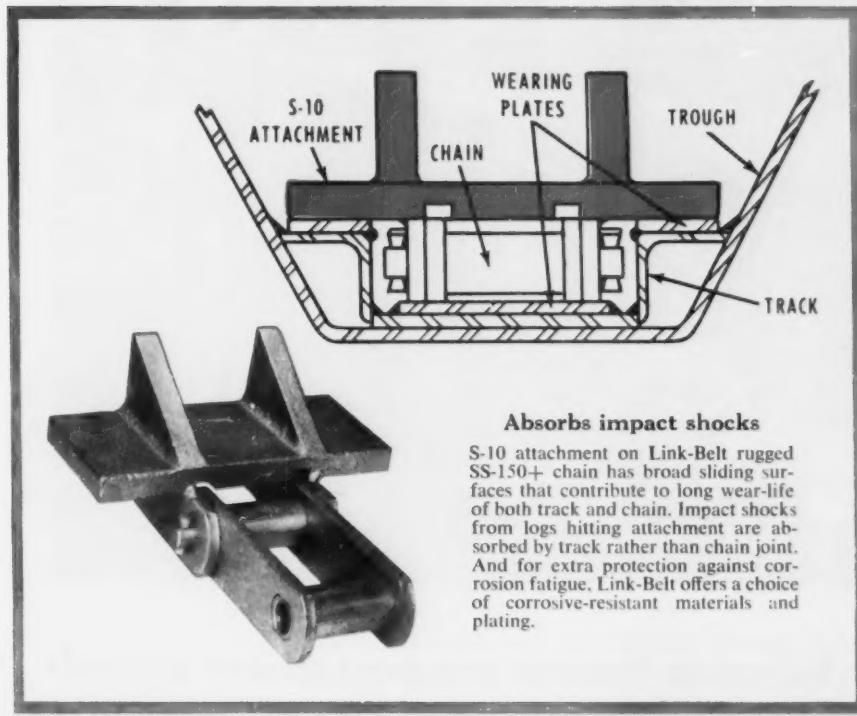
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Mfrs. of Paper Conditioners; Automatic Skid Lifts; Lift Tables; Skid Turners; Hand, Foot, Motor Driven Punching Machines; Humidifiers; Envelope Presses; Punch Heads; Tabbing Knives and Corner Cutters plus Custom Built Equipment.



*Patents Pending

SS-150+ chain and S-10 attachments team up for rugged pulpwood service



Absorbs impact shocks

S-10 attachment on Link-Belt rugged SS-150+ chain has broad sliding surfaces that contribute to long wear-life of both track and chain. Impact shocks from logs hitting attachment are absorbed by track rather than chain joint. And for extra protection against corrosion fatigue, Link-Belt offers a choice of corrosive-resistant materials and plating.

Combined strength and stamina assure long-life conveying

Equipped with S-10 attachments, Link-Belt SS-150+ chain easily withstands the grueling day-in, day-out punishment of pulpwood conveying. Its ruggedness assures top operating economy by holding down maintenance and replacement costs, minimizing conveyor shutdowns.

Design Refinements

Long-life design of SS-150+ incorporates sidebars of selected bar steel, accurately formed and machined for tight press fit of pins and bushings. The latter are made from hardened steel, closely size-controlled, and locked against rotation in sidebars.

Hard Joint Surfaces

Joint surfaces of this steel fabricated chain are up to five times harder than standard malleable—resist wear resulting from repeated shock loads and constant exposure to cutting action of abrasive particles. They repel gritty materials, prevent troublesome packing.

SS-150+ conveyor chain lasts over twice as long

In the pulpwood conveying operation shown at right, brutal impact and heavy loads plus severe abrasive and corrosive conditions caused failure of ordinary chain after only $6\frac{1}{2}$ months of service. It was replaced with a Link-Belt SS-150+ single-strand inclined conveyor with S-10 attachments which was still going strong at 20 months.

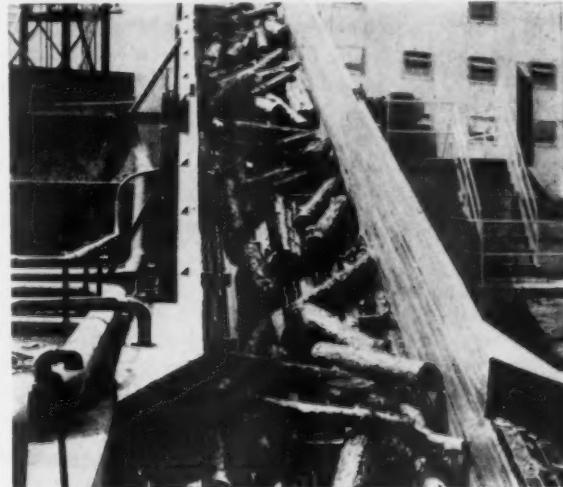
With its average ultimate strength of 100,000 lbs.—plus hardened pins, bushings, steel sidebars and joint bearing surfaces—the SS-150+ chain is ideal for such extremely severe applications.



Southern Mill
uses SS-150+ chain
with welded flights

Link-Belt SS-150+ chain is available with either S-10 attachments or welded flights. On log conveyor (above) pushers are welded directly to sidebars.

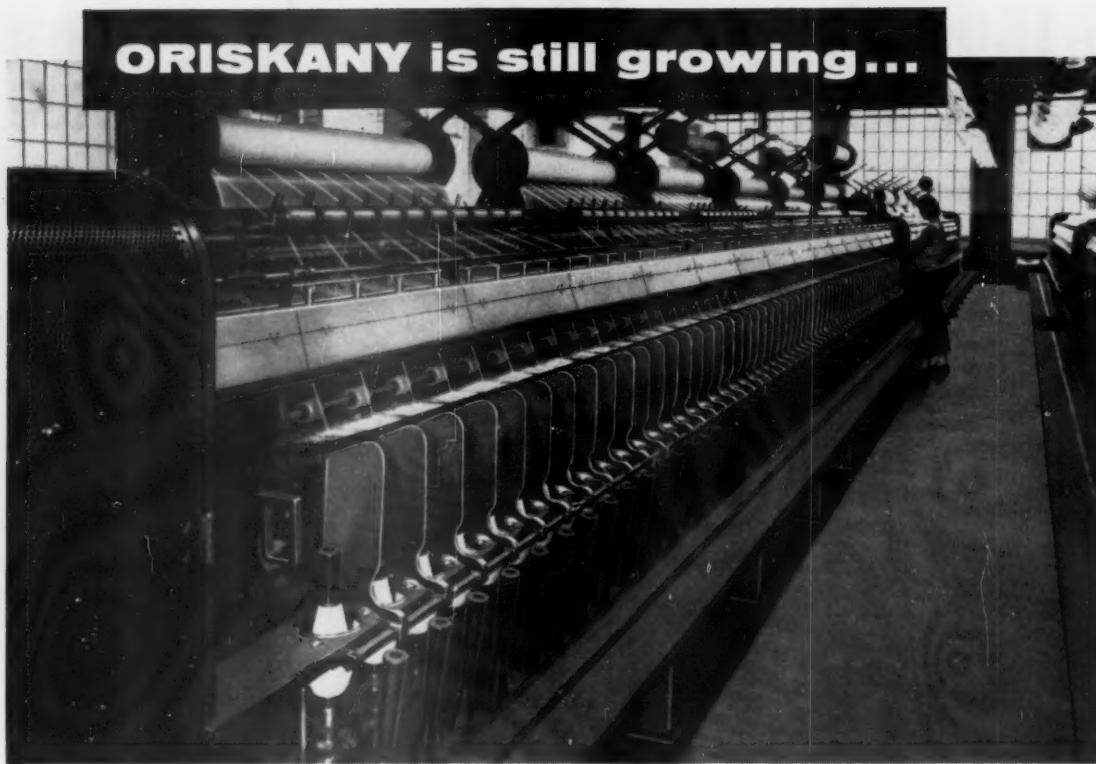
In addition to the S-10, Link-Belt offers numerous other attachments which allow economical adaptation to specific conveying and elevating needs.



HEADQUARTERS for chains, sprockets and other Link-Belt products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor. Refer to the yellow pages of your local telephone directory.

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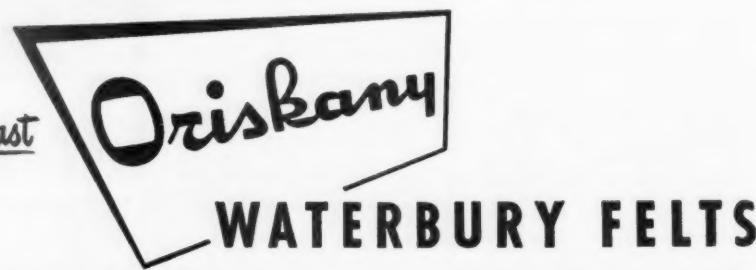
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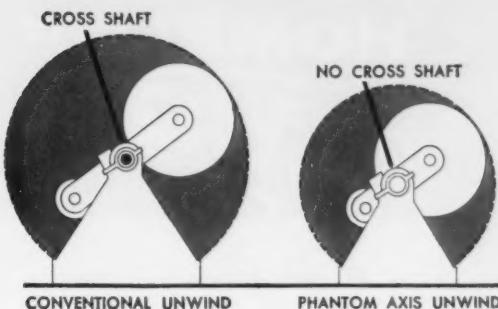
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Oliver steps ahead with a new advance in the crawler field. It's "Spot-Turn" clutch steering—to speed up your log handling. It gives you greater maneuverability, easier handling, faster work cycles. Now, with a light touch on the controls, you can make gradual turns, tight turns or complete about-faces—fast! "Spot-Turn" is responsive, dependable, simple—better in every way. Steering is always the same—uphill, downhill, sidehill—with or without a load. "Spot-Turn" lets you do more work in a day's time.

The Oliver OC-4 crawler, shown above, is popular wherever men harvest pulpwood. It goes anywhere in the hills and woods to do the job faster and cheaper. Now, with "Spot-Turn" as standard, it's a bigger value than ever.

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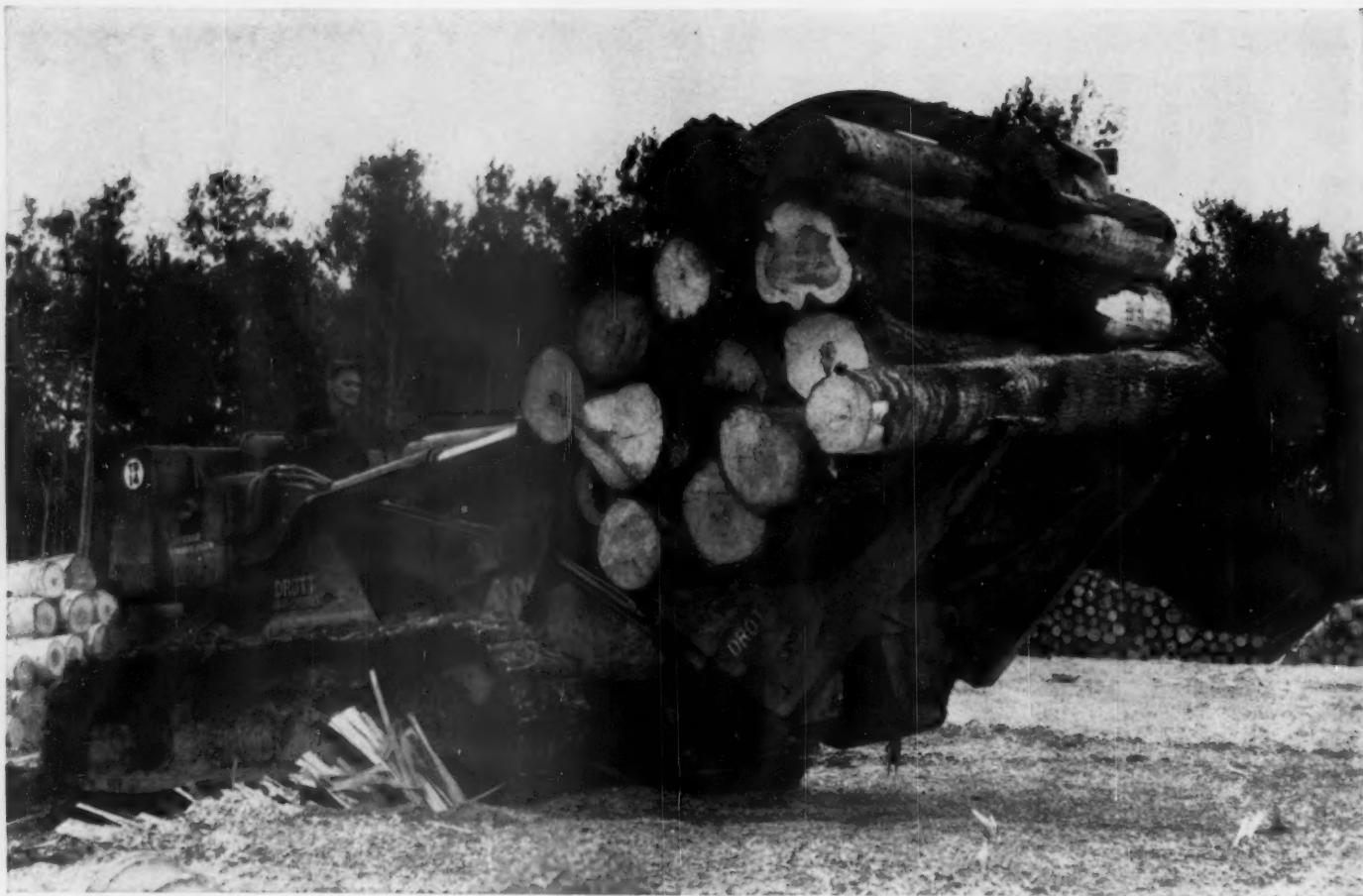
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"Before purchasing the International Drott Skid-Grapple, we used a cable loader and jammers," reports Jean Perron, for Henry Perron & Sons Limited, La Sarre, Quebec, Canada.

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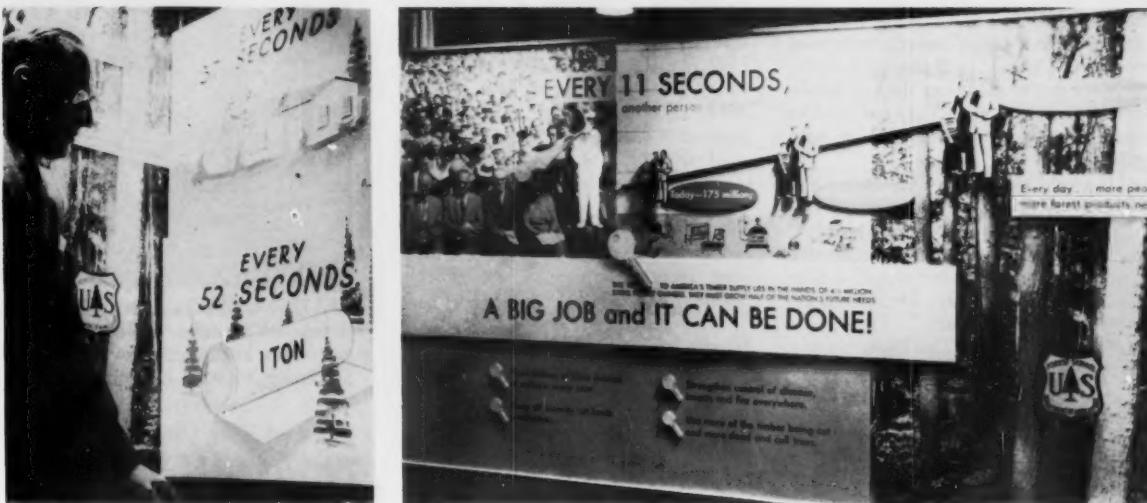
Other big advantages the Perrons report: "In addition to labor savings, the operation takes less hauling equipment, because of greater time-cycle efficiency. It has loaded out 12 million bf in two seasons with no downtime."

Prove the advantages of minimum crew log stacking or loading with a one-man-operated International Drott Skid-Grapple. Try exclusive top grab-arm action for positive load control. See how pry-over-shoe breakout action lets you wrench-out muddled-in logs with ease. See what it means to have the performance protection of exclusive shock-swallowing Hydro-Spring. Compare Skid-Grapple efficiency and economy to any other rig in the woods! See your International Drott Distributor for a demonstration of the Skid-Grapple size and type you need, from the TD-6 and TD-9 to the new, more powerful TD-15 and TD-20.

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U.S. ADDS ONE PERSON EVERY 11 SECONDS, boosting demands for all types of products and challenging industry's tree-growing projects, says Forestry Service man H. R. Josephson at annual SPCA meeting.

Grow More Wood; Seek New Markets

SPCA annual meeting stresses population growth; potential wood-use demands; need to meet outside marketing threats

By WILLIAM F. DIEHL, JR.
Southern Editor, PULP & PAPER

—Atlanta, Ga.

● Strangely enough, there was strong coincidence in the talks given by two of the top speakers at this year's Southern Pulpwood Conservation Association meeting in Atlanta's Dinkler-Plaza Hotel.

Both men emphasized the fantastic population trends in the U.S. and the world and what it will mean in terms of demand and production; both placed accent on new markets available; and both pressed a nerve—the need for still greater attention to growing and harvesting methods at home.

Said H. R. Josephson of the U.S. Forest Service, Washington, D.C.: The nearly acceptable tree planting programs of 1955 must be bolstered appreciably to meet growing needs of the wood-using industries.

Said Dr. Lincoln Thiesmeyer, president of Canada's Pulp and Paper Re-

search Institute: The paper industry cannot afford to be complacent; it must work hard to develop new markets, create new demands to overcome increasing competition from other industries.

The result was an odd but ever present paradox: Grow more trees to meet needs; create more markets to meet competition, thus build even bigger.

How U.S. Will Grow

Projected population increases are perhaps the most staggering and aweing aspect of our future. In the next ten years, U.S. population will probably increase by an amount as great as the entire population of Canada; in less than a decade the population picture in America will grow as much as the combined present populations of Great Britain and Scandinavia.

Mr. Josephson punched the picture home with a revolving clock which

illuminated the figure of a man every 11 seconds. The American population—allowing for births and deaths—adds one person every 11 seconds, a grand total of 55,000 a week. In 1920 this figure flashed on only once every 20 seconds; by 1980 it will be flashing every six seconds. Comparatively, in Russia the same figure today would flash every nine seconds; in China every two seconds and for the world, twice every second!

What does this mean for U.S. producers? Among other things, a new dwelling every 37 seconds; an increase of one ton of paper consumed every 52 seconds. Within ten years, said Mr. Josephson, we will probably double our current annual building rate of a million dwelling units and increase paper consumption by 50 million tons a year.

Going back to the Stanford Research Institute report, he produced figures which become more evident every day: Use of wood in almost

every area continues to grow at a vastly increasing rate and with it grows the need for increasing attention to planting and reforestation.

Dr. Thiesmeyer presented still another view. "Cut down those trees," he asserted. Stands must be thinned, diseased trees taken down, scrubs and poor trees killed. It is much cheaper, he went on, to clear cut than to selective cut, so we must cut, cut, cut to build even superior trees to those now existing.

"I would put those who claim our industry is in danger because we are using up our raw materials too fast in the same class with those who ten years ago predicted we would never have an atomic industry because there wasn't enough uranium."

Major portions of Dr. Thiesmeyer's speech are published on facing page.

"Ninety New Tools"

By April 14 this year, the SPCA will have, in the words of its asst. gen. mgr., John Witherspoon, "ninety new educational tools available to the conservation forester in the pulp and paper industry."

He was speaking of the sweeping Pilot Forest program, stellar attraction of this year's Pulp and Paper Day. Last year, as the SPCA's mgr., Henry Malsberger, pointed out, the economics of the industry were stressed on this special day with 84 mill and woodland tours and 49 prominent speakers addressing some 10,000 persons at mills in the South.

Pilot Forest will do more than stress. It will demonstrate by means of farm forests set up on selected privately owned tracts, the way to more profitable tree growing. Paper companies will sponsor these 90 selected forests throughout 12 Southern states.

In setting up these forests, said Mr. Witherspoon, the pulp and paper industry has agreed to do a complete initial forestry job designed to put the

property in full production.

"The ideal selection," Mr. Witherspoon said, "will be land the forester has passed by or which the landowner has been unable to improve. Actually a tract of problems." SPCA surveys indicate that productivity can be increased eventually to about one-half cord per acre per year on these pilot tracts. This represents an increase of about 50,000 cords a year which, at current f.o.b. car values of \$15 a cord, will mean at least three quarters of a million dollars a year.

"A Time To Sum Up"

"In the past 30-odd years I have seen forestry come of age in the South."

Thus the SPCA's genial manager, Henry Malsberger, summed up the change in the face of Dixie since the twenties. The major contributing factor to this development, he said, has been the growth of the pulp and paper industry which has provided a constant market for trees in almost every forested county in the region.

Specifically, he pointed to the area in 1925 and a grim picture it was: Forest fires raged uncontrolled over millions of acres a year; the few state forestry organizations at the time were piteously underfinanced and most Southern states didn't even have any; seedling planting was virtually unheard of; virgin timber was practically gone and only a few people had any faith that these areas would ever grow another crop of trees.

Thanks to a constant uphill battle, this picture is now in different focus. Accenting such projects as the American Forestry Association's forestry motion picture project and the CCC and finally the boom of pulp and paper in the South, Mr. Malsberger showed how things have changed. Then, of course, there is the role played by the SPCA, formed in 1939. He stressed its activities, not only in



RETIRING PRESIDENT OF SPCA, Brunswick's Lucian Whittle (left) congratulates incoming chief officer Karl Swenning, of Scott Paper, Chester, Pa.

public relations, but in actual services to the public. Last year alone, 13,037 landowners received free spotting service from the organization.

"It should be pointed out," he said finally, "that 20 years ago when this association was formed, the forest resource was being depleted faster than it was growing. Today, annual growth exceeds removal."

Importance of the industry was further stressed by Jack Warner, pres. of Gulf States Paper Corp. at Tuscaloosa, Ala., and president of Alabama's state Chamber of Commerce.

He said that from a handful of employees in the twenties, the industry has grown to a "dominant factor" in Southern economy employing some 80,000 individuals, earning roughly the fourth highest wages paid by industry in the South—an annual payroll of some \$400 million. Then, too, there is the annual value of the timber crop to private landowners who own nine out of every 10 acres in the South: another \$400 million.



NEWLY-ELECTED DIRECTORS OF SPCA pose for P&P camera: (from left) J. H. Keenert, Champion, A. G. Curtis, Gaylord, T. M. Courtney, Buckeye, Lucian Whittle, Brunswick, Walter Harvey, Sonoco, Karl Swenning, Scott, J. F. Sisley, Macon Kraft, E. E. Loper, Gulf States, Fred C. Gragg, IP, H. E. Ruark, Owens-Illinois.



EXCHANGING VIEWS on changes in the woodland scene are Bob Hyde (left), St. Regis, formerly at Pensacola and now in New York, and Jim Holekamp, APA logging engineer.

Sharp Curves Ahead

for pulp and paper in achieving savings while producing more and better products for the ever-increasing world population

By DR. LINCOLN R. THIESMEYER
President, Pulp and Paper
Research Institute of Canada

This is the major portion of the keynote address given by Dr. Thiesmeyer at the annual meeting of the Southern Pulpwood Conservation Assn. in Atlanta, Ga., Jan. 15.

● To have more and better trees tomorrow, we must cut and cut and cut the ones we have today. To do this profitably we must have markets for the products we can make from the wood. To offset the rising costs of harvesting the trees, we must make them yield more products per tree by using the whole tree rather than only about half of it.

If we are to increase the cut to do a better job of conservation, will there be enough wood? If there is enough wood, will the markets exist? And can we make saleable products from all of the tree?

The answer to all three questions is an almost unqualified and emphatic "Yes!" But these things will not come about automatically or by some hocus-pocus. We will have to continue to work at ensuring the future supply, at identifying and exploiting the markets, and at developing new products from the wastes (both solid and liquid) of our lumbering and our pulp and paper manufacturing operations.

Down the Drain

Nature has blessed this continent with soils and climate that support an enormous population of trees. Canada is less fortunate than the southern United States in that millions of acres of our forests exist on lands classified as "inaccessible under present conditions." But the key words here are the last three. As conditions change, as the demand for the wood develops and the technology of getting it out improves, much of that wood will be made accessible. Add to this the large quantity of wood in already accessible lands that could be saved annually by reducing losses to fire. Then add a similar quantity to be

saved from destruction by insects and disease through preventive measures, pathological treatment and the development of genetically sturdier stock. Now add the increased yields of fiber and other products per acre that can be brought about through fertilization of the stands, planting of faster-growing species and other methods of applied silviculture. Add some more for the trees that could and should be planted on lands that are only marginal or submarginal. Now pile on a not inconsiderable increment representing the use through research of what are now still regarded as "weed species." Then top off the imposing figure with the 30 to 40% of the wood in each tree that is not currently used, plus a similar percentage for the non-fibrous constituents that is still going down the drain at too many of our chemical pulp mills.

From that exercise it should be obvious that the potential wood supply of North America may be several times that required by present levels of consumption. Moreover, we are continually learning how better to manage our forests on a sustained-yield basis in perpetuity and, hence, to reap the full advantage of dealing with a constantly-renewable resource.

Bring on the Problems

We'll not be misled by those pessimists, however expert, who warn that we are using up our North American wood too rapidly and will exhaust it. Given the right amount of support consistently, the research and development boys of our industry can lick any technical or economic problems put to them. Ensuring an adequate supply of wood to meet the multiplied demands of the future is one of the easiest of those problems.

Even if we should run out of the wonderful wood-cellulose fiber, the chemists would come to our rescue. Indeed, the strides they have made within the past two years toward a synthesis of cellulose in the laboratory have been truly remarkable. And there's nothing in the books that says

INDUSTRY must create new products, new markets to offset other industry inroads, says Canada's Dr. Thiesmeyer.



that we have to make our products from trees. We do it because they are at the moment the cheapest and most convenient source of the fibrous raw material. But this is not an age for stereotyped thinking. Let's not get into a rut!

This may suggest that foresters and pulpwood operators should unite in a powerful lobby to protect their jobs by getting some kind of moratorium declared on chemical research, to hold off the evil day when the paper machine is fed from a chemical factory and when the forest reverts to a primeval, unutilized condition. I do not at all suggest such a future! Trees are themselves among nature's most remarkable chemical factories. They function around the clock, year in and year out, at an exceedingly low operating cost, under automatic controls, and without management direction by digital computer, to produce an array of organic and inorganic chemicals in a constantly-renewable supply. They represent one of the world's most abundant and cheapest sources of such materials—materials that are needed in everyday living. The very same chemists who may synthesize the cellulose fiber have been predicting for years that our trees would someday be more valued for their chemicals than for their fiber, and that our pulp and paper industry would, therefore, become eventually a chemicals-processing industry. So, the future is very bright. (Many of us may be with our ancestors by the time these predictions come true.)

tions become realities, anyway.)

Atlanta to Afghanistan

Then, what about markets? Will we have them, and can we exploit them?

In the booming economy of recent years it has almost become a pastime to develop forecasts about everything from the gross national product to the flying time between Atlanta and Afghanistan. Things are happening so fast that many otherwise conservative people feel completely safe in posing as prophets.

Our economic forecasters have worked from common assumptions and common data. They assumed no shooting war between the major powers. They also assumed continuing growth of population. The curves of increase in the number of consumers of wood and pulp and paper have had to be steepened, however, in recent years because, with higher living standards and tremendous strides in medical science, infant mortality has decreased, and the average span of life has lengthened. As these blessings become shared with less fortunate countries through the efforts of the United Nations agencies and the many foreign aid programs, the markets abroad are increased by very large factors. Moreover, the rapidly rising rates of literacy all over the world represent another big reason for sharpening the curves of demand.

Today, the population experts are revising their estimates again because they had not taken into account adequately the very great increase in fertility and the relaxation in birth control practices that have come with better health, better working conditions, better balanced diets, more recreation, improved medical care, higher incomes and more education. Additional factors have been a stronger confidence in security because of a skyrocketing economy and because of socialistic guarantees by governments; the subconscious realization among western peoples that they must build up their numbers if they are to remain competitive, and the shorter work week that has provided many more leisure hours.

Population Explosion

It is now estimated that the U. S. population will increase during the next 20 years by more than the entire present population of Canada. Assuming the same sort of steady increase in the per capita consumption of pulp, paper and paperboard as has obtained

over the past 10 years, this would represent an additional market right here at home of over 5,000,000 tons of pulp and paper products a year. Again, as living standards go up everywhere around the world, the same sort of population explosion will occur. The experts now figure that the total world population will more than double over the next 50 years. Moreover, the per capita consumption of products involving wood or derived from wood is certain to increase very rapidly in those countries where it has been low, as their rates of literacy rise. Just consider what a huge market would be represented by an increase of only 10 lb. per capita per year in China with its multiplying hordes of people. Thus, it is evident that from population increases alone there will be not only very sizable new market at home but even greater ones abroad.

Another important reason why economic forecasts have been wide of the mark is the fact that they are usually only projections forward from past experience. The curves are steepened when recent experience shows a change in the rate of increase of the item being looked at in the crystal ball, be it gross national product, capital investment, population or living costs. But they omit one very powerful factor that is also shaping our economy—the impact of science and technology. This is a source of very large error in the conventional forecasts. Yet it is not one for which the forecaster should be criticized because as yet there is no very satisfactory way of measuring this force.

No Stealing Here

The amount of research being carried out by our industry today is several times what it was only ten years ago. Therefore, the curves of demand for our products should all be turned sharply upward. So when we see a curve showing that our markets will double by about 1975, we are tempted to insist that they will really double long before that—provided we keep alert and do not allow other products such as cheap plastics to steal those markets from us.

The paperboard industry provides an excellent illustration. A few years ago the Stanford Research Institute predicted that that industry would double by the 1960s. But it has already more than doubled and might well double again within the next few years. This is because the paperboard

people have done an excellent job of product development, have sought out and met the requirements of their customers by modifying their products and adapting them to those requirements. The impetus for this and the ways of doing it go back to the extensive research and development work on packaging done during World War II to meet the very diverse requirements for shipping military material and supplies into all sorts of climatic conditions.

Women, Dresses and Paper

What has happened in packaging could also happen in other parts of the pulp and paper industry. In recent years, for example, some companies have been doing a very intensive job of product development aimed at producing non-woven fabrics made on paper machines for the clothing industry. These consist of varying combinations of the cheap wood fiber and the more expensive synthetic fibers. Disposable paper dresses, aprons, suits, neckties, shirts, bed linen and table linen, and even bathing suits are said to be not too many years from reaching the market in quantity. If and when they do and if they have been developed so well as to win ready acceptance, consider the quantity of woodpulp that will be needed to maintain our modesty and comfort, as compared with the amount we now use to keep informed as to the daily news. Not to mention the quantity women will require when they discover that they can have new dresses every few days!

From Cradle to Grave

If these predictions seem brash, consider that men's suits made of paper were among the ersatz materials developed in Nazi Europe during the war about 20 years ago. An American picked up a large stock of them after the war and brought them to this country. They were pretty miserable in quality and won no acceptance for many months. But, finally, the entire shipment was sold to undertakers! Now, I submit that, if the Nazis could do that much for our corpses, the modern pulp and paper industry, in league with the chemical industry, should be able to do a bit better for those who today run our squeeze-bottle civilization.

If paper clothing seems far in the future, consider that disposable paper cover-alls are already being worn by workers in atomic energy plants. The day when, from cradle to grave, we shall be encased in paper products may not be many years away.

Where the Responsibility?

Why doesn't the Research Institute in Montreal take a leading role in

bringing about these changes if they are of such major significance to our industry? The answer lies in the nature of the work to be done—product development and sales promotion. Those are functions of individual company research laboratories and sales departments. The Institute's terms of reference limits it pretty well to fundamental research on wood growing and harvesting and to the chemistry of wood and the various mechanical and chemical manufacturing processes for turning it onto pulp and paper. But, we can see opportunities for growth of markets and call them to attention.

Another market of potentially enormous volume that has not yet been opened up very much because of lack of sufficiently intensive product development is that of disposable dishware and molded pulp products. The paper plate is still an item regarded by the public as only suitable for picnics, children's birthday parties, camping out and so on. But think what would happen if these products were to be improved sufficiently to win the same acceptance for daily household use, perhaps only for breakfast and lunch, and for use in restaurants, snack bars, hotels, ships, trains and planes, as has the paper napkin! The volume of pulp required would exceed that consumed per capita in newsprint.

Surely in this day, when such a host of new chemicals, new coating materials, new types of fiber for admixing, new foils and plastics for lamination, and new forming and printing techniques are available, the product development people should be able to find a combination that is far better than anything yet available and at a price that is negligible per unit. Surely there must be many ceramic, glass, metal and wooden objects that could be replaced by molded pulp in the same way as the molded pulp flower pot is making inroads on the one made of clay. (In passing, how about incorporating in the molded pulp not a nutrient fertilizer that would dissolve slowly in the moisture of the soil or peat moss? Perhaps this has already been done.)

A start has been made by Lily Cup with its development of a new coating and its national advertising to persuade potential users that the cups no longer impart a "paper taste" to the coffee. We need many more such programs if the markets are to be won in any major way. It seems that to date the improvements in the products have been rather nominal, the investment in them relatively small and the effort often rather unimaginative.

Competitive Teamwork

Perhaps the reason for this failure to capture big markets thus far lies in the fact that product development has been left to the converters of the primary pulp and paper. Generally, they are rather small companies, not particularly research-oriented. And they are not organized in such a way that they could collectively underwrite the research and product development and expensive advertising necessary to go after a big-volume market.

If this be so, there are two alternatives. Either the converters might form an association to underwrite the necessary work and advertising. Or it might be underwritten by the primary producers—that is, by the pulp and paper industry itself—in the same way as du Pont has developed nylon, orlon and dacron, and then advertised their many uses to widen the demand. Then, as that demand has developed, du Pont has happily sold the raw materials in ever increasing volume. That is the sort of imaginative sales promotion needed for paper fabrics and molded pulp products. It means risks of many thousands of dollars. But it should pay off.

The sales pitch for disposable dishware could be terrific—no water to heat; no detergents to buy; no "dishpan hands" or expensive cosmetics to prevent them; no instalments to pay on a dishwashing machine. But, before such a campaign can succeed, the products must be improved considerably, and a nationwide distribution system must be set up.

Everything Including Smell

Up to this point, I have assured you that the markets for pulp and paper products would be enlarged by great increases in population and by the growing literacy of the world. And I have suggested several volume markets which are only beginning to be exploited. Yet no essay on the future of our industry would be complete without some reference to the accelerated development during recent years of new products from the solid and liquid wastes.

The use of chips from the wastes of lumbering operations for chemical pulping has grown very rapidly, especially in the West. And the profitability of many types of chipboard has been demonstrated. There remain major problems of removing and separating and using the bark. But solutions to these are in sight among the research people. Moreover, company after company is finding saleable extractives from the liquid wastes of its pulp mills. In some companies this activity has reached such importance

that a chemicals division has been established to operate in parallel with the other divisions of the company. The day when we may utilize everything including the smell does not seem very far ahead.

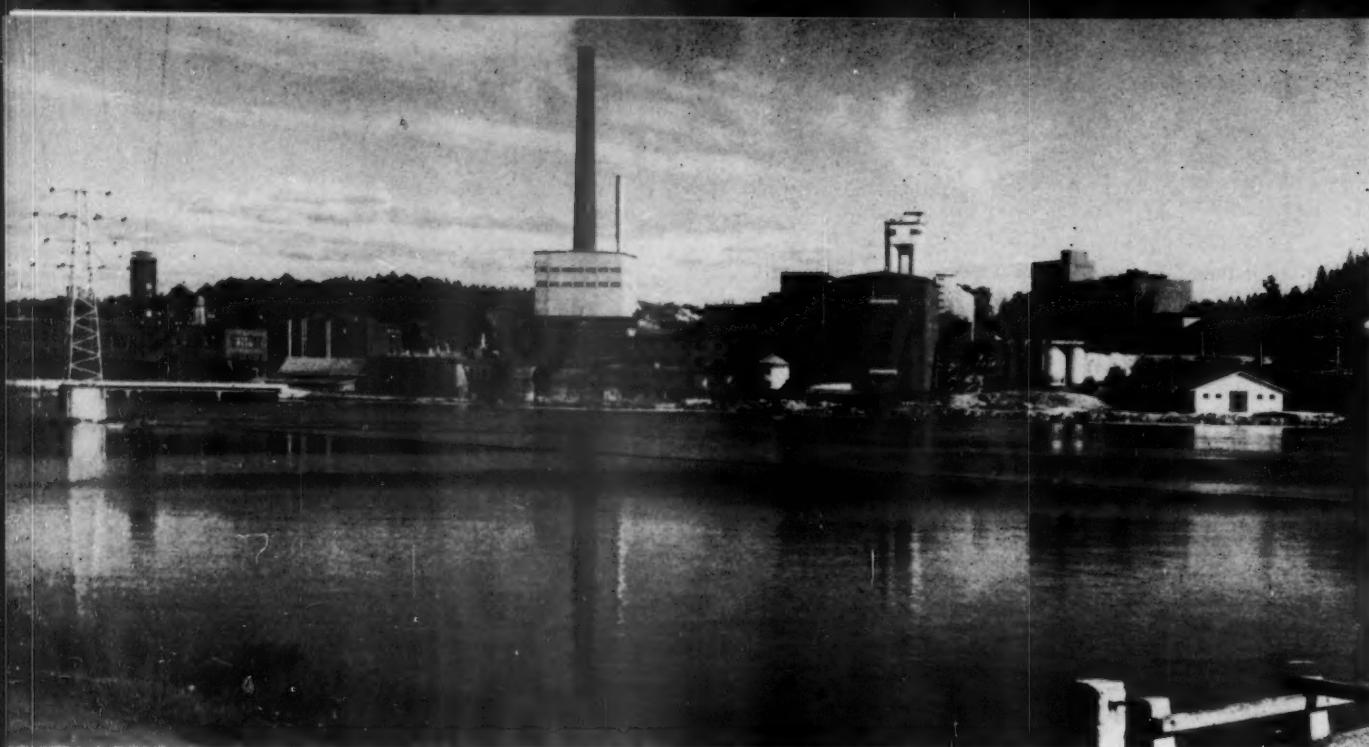
Meanwhile, we face competition such as we have never before experienced. To meet it, we will have to keep alert and do everything possible to get our production costs down. Some plastics are now so cheap as to be disposable as is paper or boxboard. Hence, in some fields we may look for a price war as well as a quality one. It does not seem that with conventional mill equipment and operating practice there is much chance for major cost-cutting in manufacturing. We will have to look to the wood-gathering operations for our major savings in the years immediately ahead.

Obsolescence and Progress

With these thoughts as motivation, the Pulp and Paper Research Institute of Canada has installed a loop of pipeline and is studying the shipment of wood in chip form in a water slurry over long distances. It is too early to describe results. But if it works without harm to the wood, there will be no reason why we should not inject chemicals into the line near its terminus and then pass the chemical slurry through a heated section of the line to do a bit of pulping en route. Indeed, this work has so many intriguing possibilities that some refer to it as "our project to make everything obsolete simultaneously"! I should add, of course, that it might even make obsolete some of our own efforts to move the pulp mill right into the woods. But this is the way to progress.

Cellulose Conference

The Second Cellulose Conference at the Cellulose Research Institute, State University College of Forestry, Syracuse, N.Y., U.S.A., on May 7 and 8, will include as speakers *E. W. Abramson*, State University, Syracuse; *C. M. Conrad*, Plant Fibers Pioneering Research Lab., New Orleans, U.S.A.; *J. K. N. Jones*, Queens University, Canada; *C. Y. Liang* and *R. H. Marchessault* and *B. G. Ranby*, American Viscose Corp., Marcus Hook, Pa., U.S.A.; *H. Sihtola*, Finnish Pulp and Paper Research Institute, Helsinki, Finland; *T. E. Timell*, Pulp and Paper Research Institute of Canada; *D. Vermaas*, N.V. Onderzoekings Instituut Research AKU, Arnhem, Netherlands; *K. Ward, Jr.*, The Institute of Paper Chemistry, Appleton, Wis., U.S.A., and *I. Jullander*, Mo och Domsjö Ltd., Ornsköldsvik, Sweden.



WITH ONLY TWO BARKING DRUMS, 350 TONS OF PULP A DAY are made at this Kymmene Aktiebolag sulfite cellulose mill in Kuusankoski, Finland. To accomplish this, Kymmene pioneered a radically new wood preparation system . . .

Log Soaker Doubles Barking

It's a hot water tunnel with upside-down conveyor. Features are:

1. Half of bark falls off.
2. Wood loss greatly reduced.
3. Heat loss small.
4. Never clogs.
5. No broomed ends.
6. Practically no steaming.
7. Less Power.
8. Less labor.

By **BJORN SUCKSDORFF**
Technical Director
Kymmene AB



BJORN SUCKSDORFF

The Problem:

—Kuusankoski, Finland

- Forest products industries all over the world are faced with the problem of barking the wood they use. The

oldest way is knife barking. The result is clean wood, but wood losses are high. The newest method is chemical barking. This method is not yet fully developed but seems to present many practical difficulties. By far the most popular methods are to bring the logs unbarked to the mills and drum or streambark them there, or first to half-peel them in the woods and then remove the rest of the bark at the point of use. This last method is most important where the wood has to be seasoned for one reason or another.

It is a well known fact that as long as the wood is green and unfrozen, it is comparatively easy to tear away the outer and inner bark from the soft cambium, particularly in the sapping season. If, however, the logs are allowed to dry with the bark on, this will stick to the wood in a most inconvenient way. The same happens if the logs are allowed to freeze, although to a lesser degree, and the worst happens if they first dry and then freeze.

Some Solutions:

Many types of soaking devices are known and operated.

One is a closed intermittently operated steaming chamber, an old construction. As with all intermittent operations, this device requires much labor and its steam economy is questionable.

A continuously operated steaming tunnel, where the wood is fed vertically down to the bottom of the tunnel, horizontally through it and vertically up again, is an improvement but has mechanical defects. Pulpwood loses its orientation in a pile when the direction of travel is changed and clogging of the tunnel occurs.

The hot water pond is the prototype of devices using water. The wood is floated on top of the water, and if many layers of wood are used, hot water sprays must be applied. The water surface must be agitated or other means adopted to stop the floating logs from turning the same side up

LOG SOAKER

all the time. This device is only usable for the melting of ice from the wood or washing its surface.

A hot pond cannot be used for real soaking of wood, because if warm water is used, the size will increase beyond practical limits; and if hot water is used, the heat losses from the immense free surface will be very great and the mist most troublesome.

An open water basin, into which the logs are fed from one end, pressed below the water and kept there by a continuous mat travelling on the surface of the water, and extracted from the free surface of the far end, is an improvement on the hot pond. Here many layers of logs are travelling through the canal, but if longer pieces of wood are used, clogging results and the steaming from the free water surface puts a limit to the temperature. The basin cannot be closed because clogging has to be cleared from the topside. In the following, a device is described by which most of the aforementioned difficulties are overcome:

Kymmene's Solution:

When the Kymmene sulfite cellulose mill was rebuilt and its production raised from 180 to 350 metric tons (about 200 to 385 short tons) per day, we were faced with the problem of increasing the barking capacity. The mill uses half-peeled seasoned spruce logs of 2 m. length (6½ ft.) and has three Wilén type barking drums 6 m. diameter and 14 m. long. Two of these drums were enough in summer, but although warm water was used in them during the winter periods, three drums were not quite enough. For the doubled production, at least three new drums were required, but there was no room for them.

It was demonstrated by trials that if wood was soaked in hot water (80° C.) for two hours, the time required in the drums was only one-fifth of the usual time in the winter. This meant less power and above all less wood losses through broken logs and broomed ends. It was therefore decided to construct a soaking device for pre-treating the logs.

How New Device Operates

The basic idea of the new device is that a continuous pile of wood continuously would be fed through a closed hot water canal or tunnel without altering its shape. To achieve this the two sides of the canal are made vertical, but the top and bottom are

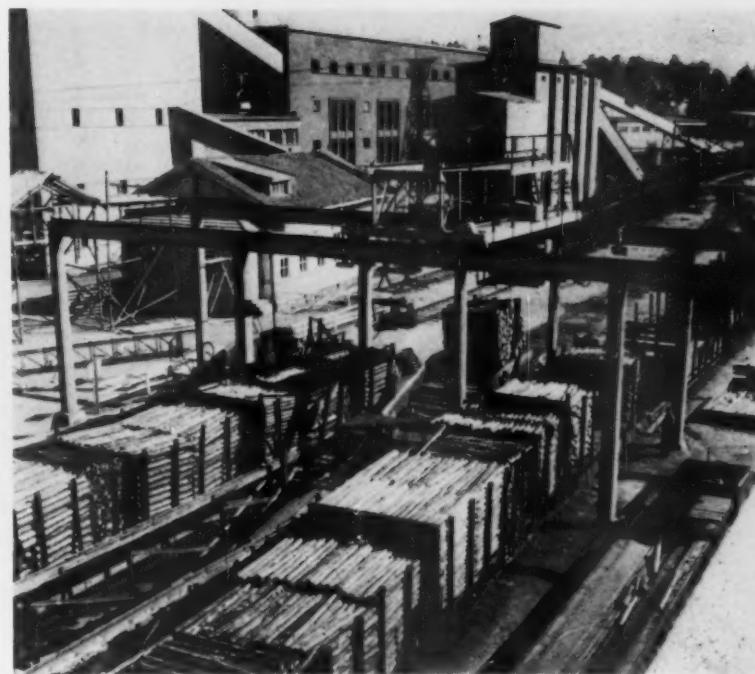


FIG. 1—OUTSIDE VIEW, SHOWING ENTRANCE OF INGENIOUS NEW SOAKING TUNNEL. The bundle of wood below crane, between lines of pulp-wood-loaded railroad cars, is poised for its trip down through the tunnel which extends to lower left of picture. Kymmene sulfite mill in background.

parts of concentric cylinders with their axis high up in the air.

Fig. 1 demonstrates the construction. The wood is fed in bundles of about 10 cu. m. (353 cu. ft.) each by an overhead crane onto a conveyor with downward slope. On this first conveyor a pile is formed, 2 m. wide (6½ ft.) and 1.5-2.0 m. high.

Fig. 2. The pile travels continuously down into the water and gradually floats up against a second long conveyor running under the roof of the canal. Devices were provided to stop the conveyor should the pile by mistake be made so high that jamming between the two conveyors could happen, but since the operators have been accustomed to their job, these are no longer necessary. The speeds of the two conveyors are proportionate to their radii from the cylinder axis and are adjustable.

The second or inverse conveyor carries the pile, which floats up against it, further down into the canal and gradually through it and up again.

Fig. 3 shows the first canal or tunnel ready for use. When the pile reaches the free water surface in the discharge end, it collapses upward and the logs float up on the water. A third conveyor with higher speed than the two first removes logs from the soaking canal over the end wall.

Heat Loss Small; Never Clogs

The water in the canal is recirculated through a heat exchanger and kept at 75°-80° C. temperature. The walls are all insulated and the heat losses therefore small. The free water surface in the feed end is so little that practically no steaming occurs. (Fig. 2.) In the discharge end the hot and wet logs are steaming and cold water is used to cool them. Good ventilation and a hood are required.

It took us one year before all teething troubles were cured, but since then the canal has been in operation three years. Not once has it been clogged. At the start we found to our surprise that strips of bark were loosened already in the water and that they sank to the bottom of the canal, and means for removing them had to be constructed. Another, more pleasant surprise was that a big portion of the bark dropped off when the logs fell down a chute onto a conveyor. The total result was that we are able to make 350 tons a day with the soaking canal and only two barking drums.

In Second Unit, Half Logs Lose All Bark

The mill is constructed for using two kinds of wood: Spruce and birch, simultaneously. Two canals are, therefore, needed. After we had

gained experience with the first, the second canal was built. Because the bark came off so easily, it was decided to add a Valmet parallel barking pocket of I.K.R. type to remove the loose bark-slabs. The pocket works continuously and the volume is only 10 cu.m. As 100 cu.m. per hour are fed through it, the average time in the barker is only 6 min.

Here again we found that the results were beyond expectations, and that one half of the logs came out fully barked. As, however, the present hook-up is such as it is, all the logs have to pass through the drums. At the moment a 25 cu.m. I.K.R. barker is added to the first canal and the conveyors changed so that the old drums will be left out altogether. The relatively few not acceptable logs will be sorted out on a conveyor and returned to the parallel-barker, but the bulk goes straight to the chipper.

Our wood is, as mentioned before, half-peeled and contains about 2% bark (b.d. basis). Without soaking, the wood losses in our barking drums in addition to the 2% bark removed were 1% to 3% depending on the season. When the wood is soaked and drummed, the wood losses are below 5%, but in the parallel I.K.R. barker they are practically nil.

The power required in the I.K.R. barker is only 20% of that of the drums, and the logs come out without broomed ends, thus reducing the

amount of the sawdust fraction from the chip screens.

The steam consumption is 100 to 300 kgs. per ton of unbleached pulp depending on the season. As the drums require 20 tons of water per ton of pulp, and this water in the winter has to be heated 20° C. to melt and soften the bark, it is easy to see that without soaking the heat losses in

the wintertime are perhaps twice as big. How much labor can be saved depends entirely on local circumstances. In our case production has been doubled without increasing the number of employes. We are, therefore, satisfied that our new development is in every way economical. The invention has been patented in most leading forest industries countries.



FIG. 3.—INSIDE VIEW OF KYMMENE'S FIRST SOAKING TUNNEL, ready for use. It is drained for this picture. Note a couple of logs at the bottom, BELOW the conveyor. The chain conveyor, with cross-bars to drag along the logs floating below, is apparently hanging lower than when logs are passing through. The pile floats up against it. When pile reaches free water surface in discharge end, it collapses UPWARD on water.

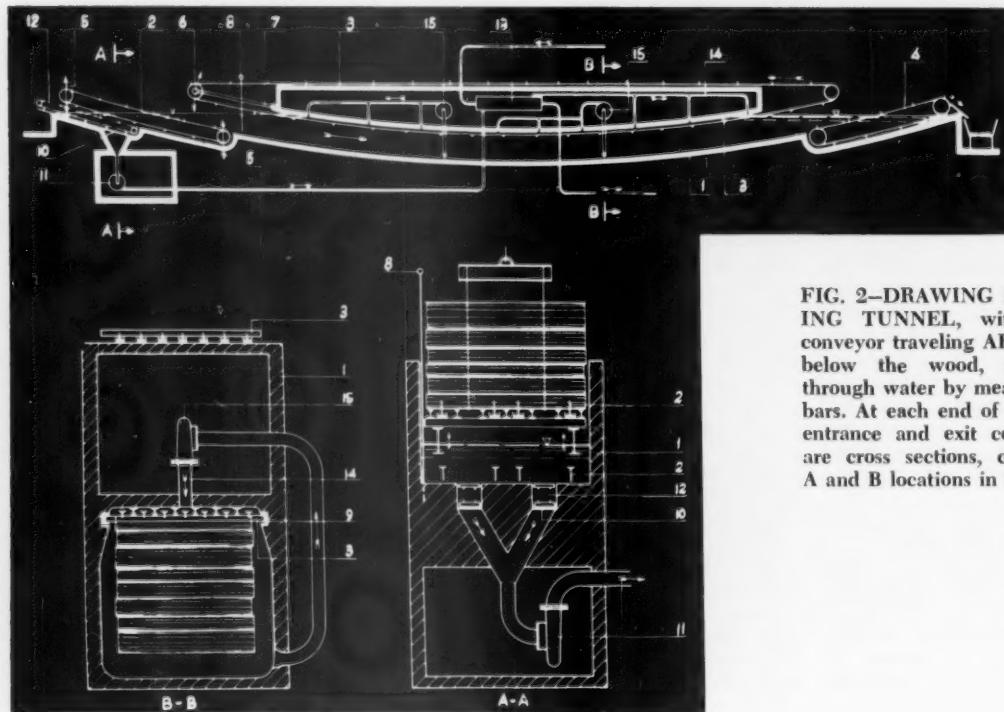


FIG. 2—DRAWING SHOWS SOAKING TUNNEL, with upside-down conveyor traveling ABOVE instead of below the wood, dragging wood through water by means of steel cross bars. At each end of top drawing are entrance and exit conveyors. Below are cross sections, corresponding to A and B locations in top drawing.



Dominion Engineering Wallboard Machines.

On left and inset: Hardboard Machine.

Background: Insulating Board Machine.

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THE VALVE AND FITTINGS ANSWER CORNER



Carl Tyka, Cooper Alloy Technical Service Director, answers your questions on stainless valves and fittings.

Q. *How can one remedy a hydraulic hammer produced in a piping system during closing of a motor-operated gate valve?*

A. Hydraulic hammer indicates an excessive pressure buildup rate caused by too rapid a valve closing cycle. Lengthening the time of closure will eliminate this condition.

Q. *What to do about interruption of closure of motor-operated gate valve caused by the torque switch cutting out when in the near-closed position?*

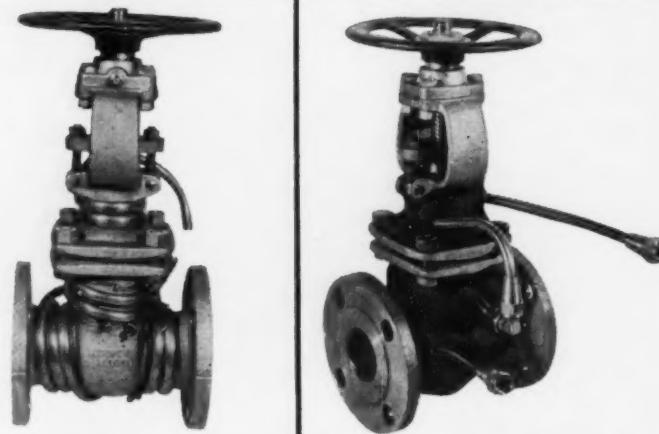
A. Increase the spring load in the operator torque cutout. Obviously, the disc when approaching the closed position develops across it larger pressure drops and resulting friction, which requires operating power in excess of the maximum passable through the torque cutout.

Q. *Does V2B stainless alloy lend itself to use in valve discs?*

A. Yes. V2B's corrosion and erosion resistance, plus its non-galling characteristics, are ideally suited for valve disc applications. Typical Brinell hardness values range from 302, as cast, to 363 when annealed and hardened. V2B contains Mo, Si, Cu, and Be, and is easily machined in the quench-annealed condition (Brinell 269). Corrosion resistance to H_2SO_4 , HCl , H_3PO_4 , and their salts in the hardened condition exceeds that of all other precipitation-hardenable alloys, and even 316-type stainless. Its resistance to highly concentrated hot HNO_3 , however, is less than that of 304 and 316.

Q. *In open-shut operations, which type gate valve is preferable: wedge type, or parallel-faced disc type?*

A. This depends on many variables such as system pressure, temperature, and differential pressure across the disc. With low system pressures and temperatures, the wedge type is preferred for positive shutoff. With high temperature-pressure systems, however, since shutoff tightness is directly affected by pressure drop across the disc, the parallel-faced disc type is preferable, especially in regard to required stem torque and disc binding.



Thermon fills voids between body and tubing, providing continuous heat-flow path between heating element and valve body. It can be easily removed for repair of leakage in tracers.

We've Cut Jacketed Valve Cost By 75%

Standard Cooper Alloy stainless steel valve models with low-cost Thermon* jacket are designed for use in hot or cold service

Thermon, a non-metallic plastic compound with highly efficient heat-transfer properties when factory-applied to standard Cooper Alloy stainless steel valves with conventional steam traced or thermal electric systems, permits all the performance advantages and none of the problems generally associated with jacketed units. You can even use standard piping without juggling sizes, and product contamination, usually a big problem with most jacketed units, is not possible, because we have eliminated the need for complicated castings which are subject to hidden defects.

What's more, the costs are one-quarter of what you would expect to pay for jacketed valves. Thoroughly tested under all operating conditions, Cooper Alloy Thermonized valves have the high performance characteristics equal to the most efficient jacketed

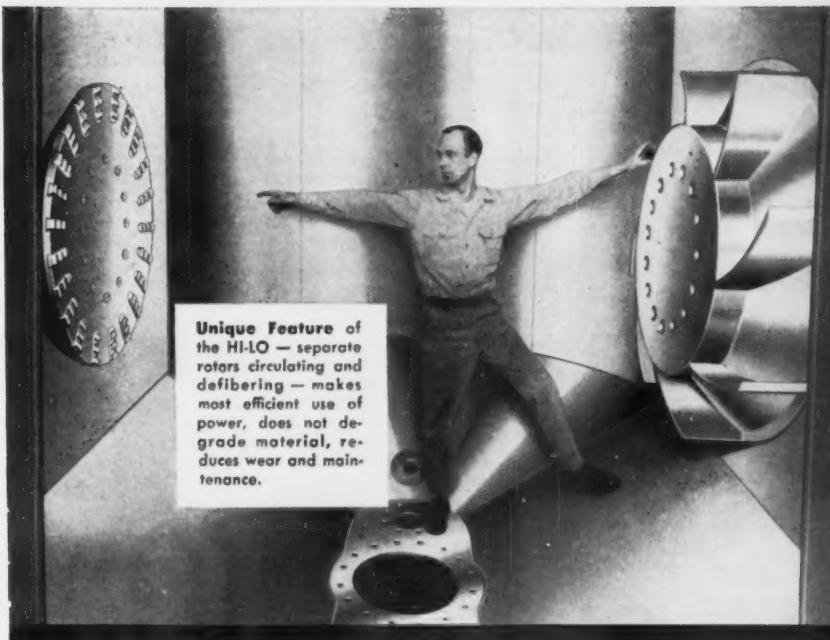
units, in operating temperature ranges from below zero up to 750°F.

Cooper Alloy Thermonized valves make maintenance problems easy. Should tracer leaks develop, they can be quickly found and repaired. With a minimum of down time required, your processing operation can be continued without a great loss of productive hours and manpower.

With Cooper Alloy Thermonized valves you get all the high quality features you expect in a Cooper Alloy product. You get high-performance, lower-cost jacketed valves, and you can get practically off-the-shelf delivery to meet your production needs. For further details, request engineering data folder from Cooper Alloy Corp., Hillside, N. J.

*Thermon is a product of the Thermon Mfg. Co., Houston, Texas.

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HI-LO PULPER



**For faster pulping and complete defibering
of even the most difficult materials**

Developed to achieve the ultimate in pulping and defibering, the HI-LO Pulper has already proved itself in dozens of mills across the country.

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**New notched blade de-
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accelerates complete defi-
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tain a square edge five to
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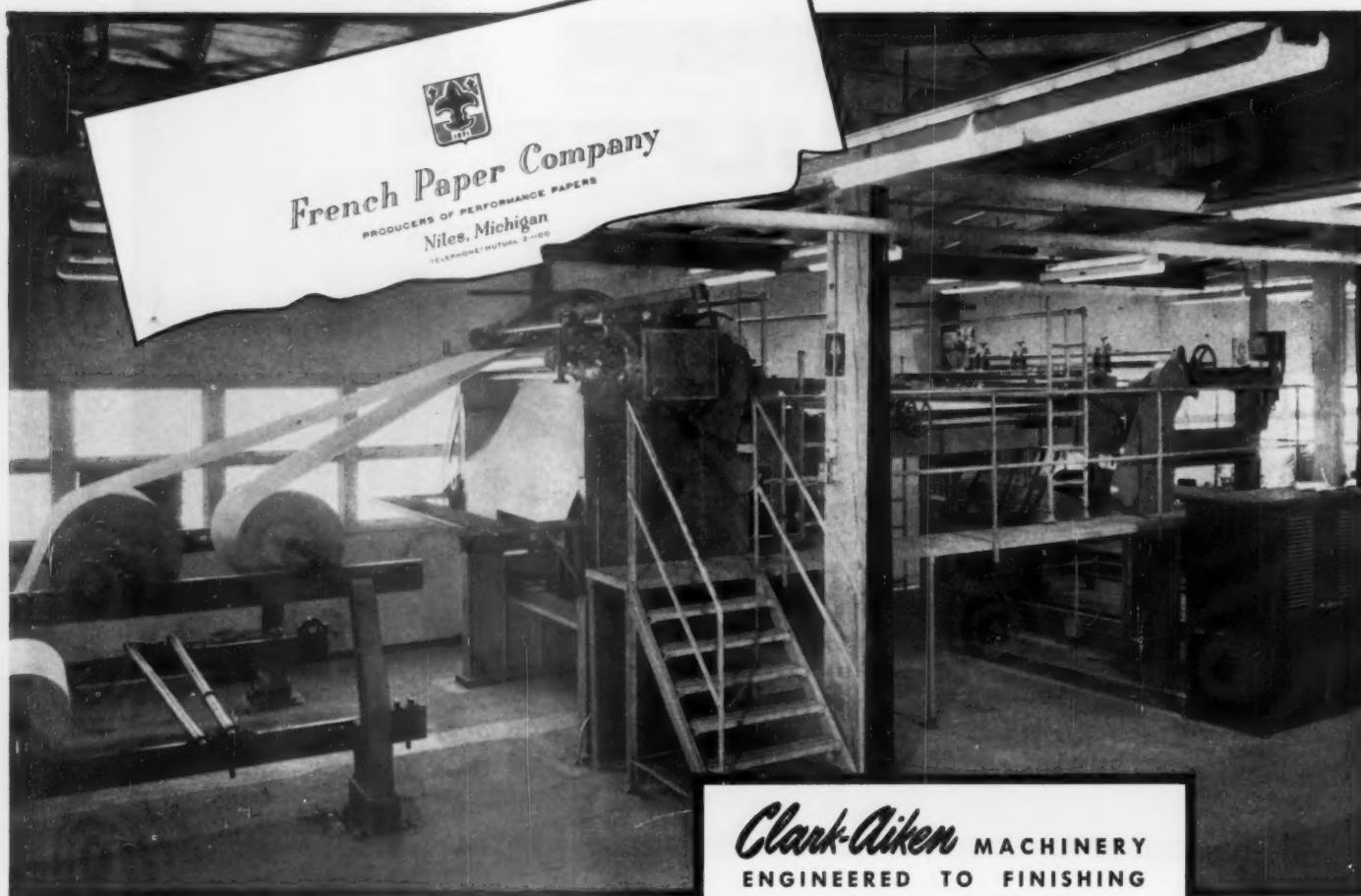
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Clark-Aiken Sheeters on-the-job

at...



MR. FRANK FRENCH, PRESIDENT FRENCH PAPER COMPANY REPORTS:

"You have written in regard to our opinion of the Clark-Aiken Sheeter.

Several years ago we installed two of these in our mill, and I think the best comment that we can make is this:

1 We recently installed one of Clark-Aiken's latest machines and did not hesitate in any way to order this machine, and as a matter of fact did not even give any consideration to any other makes, although they are doubtless good, too.

2 We have recommended to our friends that they could not make any mistake in adopting a Clark-Aiken Sheeter for their needs."

We cordially invite you to visit us in Booth 853 at the AMA Packaging Exposition in Chicago's International Amphitheater, April 13-17, to see the sensational new Clark-Aiken "G" Cutter and standard line of Lift Tables.

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There is a whole new concept in today's finishing rooms by alert management — complete engineering to provide practical automated operation. So many savings can be projected by utilizing the modern equipment now available that it means important reduction in costs. Clark-Aiken equipment plus Clark-Aiken engineering to individual requirements may be your answer to better control of your finishing room production. Your inquiry will get our immediate and interested attention.

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957 SPRINGFIELD ROAD

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Midwest

Northwest Paper Co., Cloquet, Minn., reports the appointment of PHILIP W. BUDD as production mgr. of the Brainerd mill. He was formerly finishing and shipping mgr. at Cloquet. Succeeding Mr. Budd at Cloquet is HAROLD H. HUSEBY, asst. mgr. Named supt. of paper manufacturing and asst. production mgr. at Brainerd was EARL W. WOLLEAT, formerly manufacturing supt. and asst. to the mgr.

CECIL C. PARVIN, 49, mgr. of manufacturing for Nekoosa-Edwards Paper Co., died recently after suffering a heart attack. He had been with the Port Edwards, Wis. firm since 1934, starting as a shipping clerk. He became asst. to the



J. T. Kirkpatrick Joins Sutherland Board

Mr. Kirkpatrick, vice pres. since 1954, has been with Sutherland Paper Co., Kalamazoo, for 20 years. He became mgr. of the Paraffined Carton Sales div. in 1944, in 1952 asst. to the vice pres., sales, and later became gen. sales mgr. In another Sutherland appointment, HOWARD LUIKENS becomes gen. purchasing agent to succeed D. D. BACHELDER, who died in January at the age of 59.



Russell M. Mather Promoted by Stone Container Corp.

... to newly created position of gen. mgr. of Boxboard div. He will have responsibility for mills at Franklin, Ohio, and at Mobile, Ala. Mr. Mather was gen. mill mgr. at Franklin and will continue to locate there.

mgr. of manufacturing in 1944 and gen. supt. in 1947. Mr. Parvin became mgr. of manufacturing in 1955. . . . THOMAS B. NANTZ has been named vice pres. of manufacturing for B. F. Goodrich Chemical Co., Cleveland. Formerly gen. mgr. of plants, he succeeds ROBERT D. SCOTT, recently appointed vice pres., development.

ROBERT GAVIN of B. F. Nelson Mfg. Co., Minneapolis, is gen. convention chairman for the fall meeting of the Northwestern Div., Superintendents Assn. The gathering is set for the Hotel Leamington, Minneapolis, Sept. 9-11.

Allis-Chalmers Mfg. Co. has named two men to the Detroit district: ROY E. GOODWILL JR., sales representative, becomes mgr. of gen. industrial sales, and KENNETH WOMELSDORF, formerly an Allis-Chalmers trainee, is sales representative. . . . In the Chicago area FRANK M. SCOTT has been made mgr. of utility sales; JOSEPH N. BANKY is mgr., heavy industrial sales; HENRY W. SCHAUER becomes mgr., processing industry sales, and STANLEY E. BOVIN, mgr., gen. industrial sales. All were formerly Chicago sales representatives.

RONALD B. BENGSTON becomes personnel mgr. for Hvster Co. plants in Peoria and Kewanee, Ill. He has been both chief accountant and office mgr. . . . GEORGE B. REDMOND has been named mgr., industrial sales for Clinton Corn Processing Co., Clinton, Iowa. He was formerly head of the industrial field section, technical sales service.

DELTON BEAULIEU, process and product engineer for Kimberly-Clark Corp., addressed a recent meeting of Ohio TAPPI on the subject, "Some Aspects of Super-calendering." He stressed the effect of moisture application, the effects of calender speed and control of stock temperature.

LOY R. WHITESIDE becomes mgr. of the Chicago sales branch of the Solvay Process div., Allied Chemical Corp. He succeeds JAMES M. MURPHEY, who has retired after 35 years with the firm. . . . In another Solvay Process appointment, SOLON D. FISHER is St. Louis mgr. to succeed ELMER J. SEENER, retiring after more than 40 years.

WILLIAM W. SCULL is named vice pres., manufacturing, for B. F. Goodrich Co., Akron, Ohio. He had been director of manufacturing services. . . . H. K. Ferguson Co., Cleveland industrial engineering and building firm, has named ALFRED H. GERBER chief estimator. He supervises all engineering design and construction estimates. He was formerly chief structural engineer. . . . DONALD F. BALL is



Seidensticker Hoey

New President of Chillicothe Paper Co.

Directors of Chillicothe Paper Co. Chillicothe, O., elected N. A. SEIDENSTICKER president and general manager and E. A. HOEY, vice president and sales manager, announced D. F. MORRIS, president of The Mead Corp., parent company. Mr. Seidensticker joined Chillicothe Paper in 1928 following graduation from Notre Dame. His first job was in traffic dept. He was elected treas. in 1945; secy. treas. in 1954; and vice pres. and gen. mgr. in 1957. He succeeds AUSTIN P. STORY, who retires after 16 years as chief executive. Mr. Story, associated with the company since the date of incorporation, June 21, 1919, was elected its second president and general manager in 1942. Mr. Hoey, graduate of U. of Delaware, joined Chillicothe in 1928 as salesman. He was named sales mgr. in 1953. His predecessor, A. I. CAHILL, is retiring after 33 years. F. L. ZELLER, vice pres. and longtime mill mgr. and supt., who joined the company in 1940, is retiring also under provision of a company pension plan.

named mgr. of heavy truck sales for the Ford div. of Ford Motor Co. Formerly supervisor of the heavy truck sales and engineering section at Dearborn, Mich., he succeeds JOHN F. MCLEAN JR., named exec. asst. to the regional sales mgr., Chicago.

JOHN WALDRON CORP., subsidiary of Midland-Ross Corp., has moved its Chicago office to a new building in Mount Prospect, Ill., a suburb of Chicago near O'Hare airfield. Personnel of all divisions of the company will headquartered there, including its affiliate, J. O. Ross Engineering, div. of Midland-Ross. . . . JOHN C. ALDERSON was appointed district mgr. i/c of new district sales office at 3250 Southside Ave., Cincinnati 4, O., according to H. A. BENEDIXEN, vice pres. and gen. mgr. of Clinton Corn Processing Co.

ARCHIE C. ANDERSON has been named technical director of A. O. Smith Corp.'s new Reinforced Plastics div. . . . JOSEPH C. CAPRINO is sales engineer in the Chicago district for General Electric Co.'s silicone products dept. He was formerly

Strictly Personal

a specialist in rubber market development at Waterford, N. Y. . . . F. L. PEPPER has been made western district mgr. for American Cyanamid Co.'s dyes dept. W. L. SHAW is asst. mgr. Mr. Shaw is a member of both APPA and TAPPI. The men will headquartered in Chicago. . . .

GARTH E. PEHRSON becomes sales engineer in the Chicago district office of Graver Water Conditioning Co., div. of Union Tank Car Co. He was a process engineer in the sales dept. . . . ROBERT E. MITCHELL is plant mgr. of Eaton Mfg. Co.'s Dynamatic div., Kenosha, Wis. He was formerly on Eaton's industrial relations staff in Cleveland. . . . CLARENCE P. SHELDON of Arlington Heights, Ill., has been elected a vice pres. of Northwest Paper Co., Cloquet, Minn., and at the same time appointed gen. sales mgr. with offices in Chicago.—Don W. Zeigler.



"Powers That Be" at Control Panel

Rhinelander Paper Co. (St. Regis subsidiary) key executives were on hand at inauguration of new power installation (l to r): R. H. JENSEN, chief engineer, FOLKE BECKER, board chairman, B. R. CANCELL, president, and W. R. HASELTON, vice pres. and gen. mgr.



"Powers Behind the Throne" Aid Ripco Project

Many years of experience are represented by this group from Rhinelander's engineering staff, responsible for smooth installation and operation of new power plant (l to r): A. E. TESCHENDORF, asst. chief engineer, J. S. STIEG, steam power engineer, W. F. ADAMCZYK, electrical engineer, E. COPPENGER, steam power foreman, C. LINDWALL, instrument supervisor, P. G. MICHELS, field engineer, and R. H. JENSEN, chief engineer. (See story on Rhinelander power expansion in this issue)

CB&I Transfers Four

Chicago Bridge & Iron Co. has transferred four sales engineers:

RICHARD D. AYERS, formerly of the Chicago sales office and a five-year veteran with CB&I, has been assigned to the Boston office; ROBERT L. BLANDFORD, who joined the company in 1955, has been transferred from the general sales office in Chicago to Tulsa, Okla.; JAMES T. DUNN, with the firm since 1951, has moved to the Philadelphia office after several years in Chicago, and DONALD F. SIMONS has been assigned to the Chicago office after nearly five years with Chicago Bridge.

At the same time it was reported that WILLIAM C. ROBERTS has been named supt. at the Greenville, Pa. plant. He has been with the company since 1950.



**Dr. Gunther Baldauf
Appointed by Allied Paper**

as research mgr. at the Kalamazoo, Mich. mills. A graduate of Massachusetts Institute of Technology, he was for the past 10 years research chemical engr. for the Ecusta Paper div. of Olin-Mathieson Chemical Corp.

Sigler Elected CCA Vice Pres.

PAUL E. SIGLER has been named a vice pres. of Container Corp. of America.

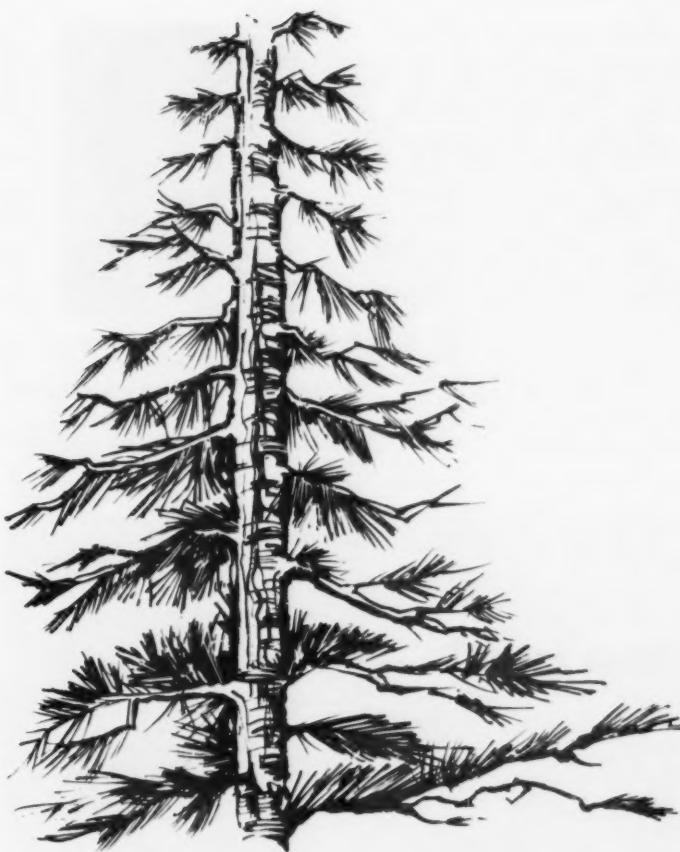
He is responsible for manufacturing, new project correlation, quality and operating programs and procedures, cost controls and engineering in northern linerboard and corrugated medium mills in Wilmington, Del.; Noblesville and Carthage, Ind.; Circleville and Cincinnati, O.; Ogden Ave., Chicago, and 57th Street, Los Angeles. Mr. Sigler continues to make his headquarters at Carthage, Ind.

Northeast

JAMES E. CARPENTER is asst. mgr. of International Paper Co.'s Ticonderoga, N. Y. mill. . . RALPH A. MASTER, mgr. of IP's York Haven, Pa. plant, died January 27. He joined the company in 1926 as an engineer at Glens Falls, became York Haven mgr. in 1940.

Congratulations to P. H. Glatfelter Co. on winning the APPA Regional Safety Award. . . New members of the 25-Year Club at Finch, Pruyn & Co. are CLYDE DAVIS, mgr. of scheduling; EDWARD MOON, master mechanic; GEORGE BOLDUC, JOHN CAMPINELLI and HAROLD COULTER, machine tenders. . . ANDRE H. LOCUS, a native of Belgium, has joined Rayonier's technical service dept. as a technical representative to domestic and overseas customers. . . DONALD R. MACKINNON steps along as technical specialties asst. to the coating supt. at Oxford Paper Co., Lawrence, Mass.

ALLEN I. BARRY now covers New England for Infilco Inc., with headquarters in Milton, Mass. . . RICHARD C. BROWN succeeds Dr. ROY C. CHARRON (retired) as director of the U. S. Envelope Co. laboratory, Metuchen, N. J. . . It's a girl for Mr. and Mrs. NEAL MARTIN. Their fourth child. He is control chemist for Fraser Paper Ltd., Madawaska, Me.



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HARDWOOD KRAFT • SOFTWOOD KRAFT

PENOBSBOT CHEMICAL FIBRE COMPANY *Market Wood Pulps Since 1882*

211 Congress Street, Boston 10, Mass. Telephone: Liberty 2-3870
Mills at Old Town, Maine

JOHN M. TAYLOR SR., founder and past board chairman of Taylor Fibre Co. and a pioneer in vulcanized fibers, died Jan. 13. . . DR. SEBASTIAN B. LITTAUER is a consultant in operations research and statistical quality control for Calkin & Bayley Inc. . . H. C. NICKELSEN is district sales mgr. for Clinton Corn Processing Co. in metropolitan New York. . . HARRY E. BEANE JR. is Bristol Co.'s new sales engineer in the Albany-Syracuse area. . . GEORGE HAMBERGER moves up to sales mgr. for stainless tubular products, Union Steel Corp.

E. O. EHRHART retires as president of Armstrong Forest Co. Taking over top executive functions is ARTHUR L. BENNETT, vice pres. Mr. Ehrhart was with the New York & Pennsylvania Co. subsidiary

43 years and was a pioneer in chemical debarking.

WILLIAM J. SHAUGHNESSY rejoins Albany Felt Co. as service engineer operating out of Albany, N.Y. He's a (1954) of N.Y. State College of Forestry at Syracuse, N.Y. . . DR. HOWARD H. HURMENCE moves up as technical director of Allied Chemical Corp.'s General Chemical div., succeeding J. W. SWAINE, recently named vice pres. of research, engineering and construction. . . ROBERT E. CLAGETT is now asst. to the mgr., organic chemicals section, and ARTHUR S. SWENSON JR., asst. to the mgr., special chemicals section, Solvay Process div., Allied Chemical. . . ROSS A. FIFE retires as exec. sec. of The Tissue Assn., is succeeded by CHARLES J. CAREY.



Harold Holden, New Gilman President and Gen. Mgr.

Mr. Holden, formerly vice chairman of Standard Packaging Corp., continues as a director and member of the executive committee of that firm. The announcement of his new position was made by Charles Gilman, board chairman and chief executive officer of Gilman Paper Co.

Associated with the paper industry all his adult life, Mr. Holden began his career as a chemical engineer for Fulilah Paper Co. He became New England mgr. for the Paper Makers Chemical div. of Hercules Powder Co. and subsequently joined Oxford Paper Co. as vice pres., sales. Prior to joining Standard Packaging he was president and chief executive officer of Eastern Corp.



Derek G. Currie, Vice Pres., Standard Packaging

Mr. Currie is in charge of Eastern div. manufacturing and sales with headquarters at Bangor, Maine. He joined Eastern Corp. in 1957 as vice pres. and asst. to the president, became vice pres. and gen. mgr. in 1958.

Born in England, Mr. Currie spent his childhood in Ireland and as a young man joined the Wiggins Teape Group as a management trainee. From 1939 to 1943 he was a major in the British army with duty tours in India and southeast Asia. He became a member of the paper control staff for the government of India and from 1944 to 1946 served as that country's director of paper, coordinating and controlling production in 15 mills.

Mr. Currie joined E. B. Eddy Co. in Canada in 1946 as exec. asst. to the vice pres. and gen. mgr., traveling to New Zealand, Australia, India, Pakistan and South Africa. Later as vice pres. and director of Eddy he was in charge of all production and engineering from 1950 to 1957.

Texas Gulf Appointments

Texas Gulf Sulphur Co., 75 East 45th St., New York 17, has announced the appointment of W. B. GILLETTE and BRYAN W. GUESS as asst. sales mgrs.

*Speeds
roll wrapping!*

LAMB

*Automatic
HEAD GLUER*

- **FASTER PRODUCTION**
- **SAVES TIME**
- **SAVES GLUE**

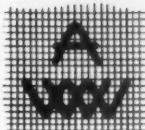
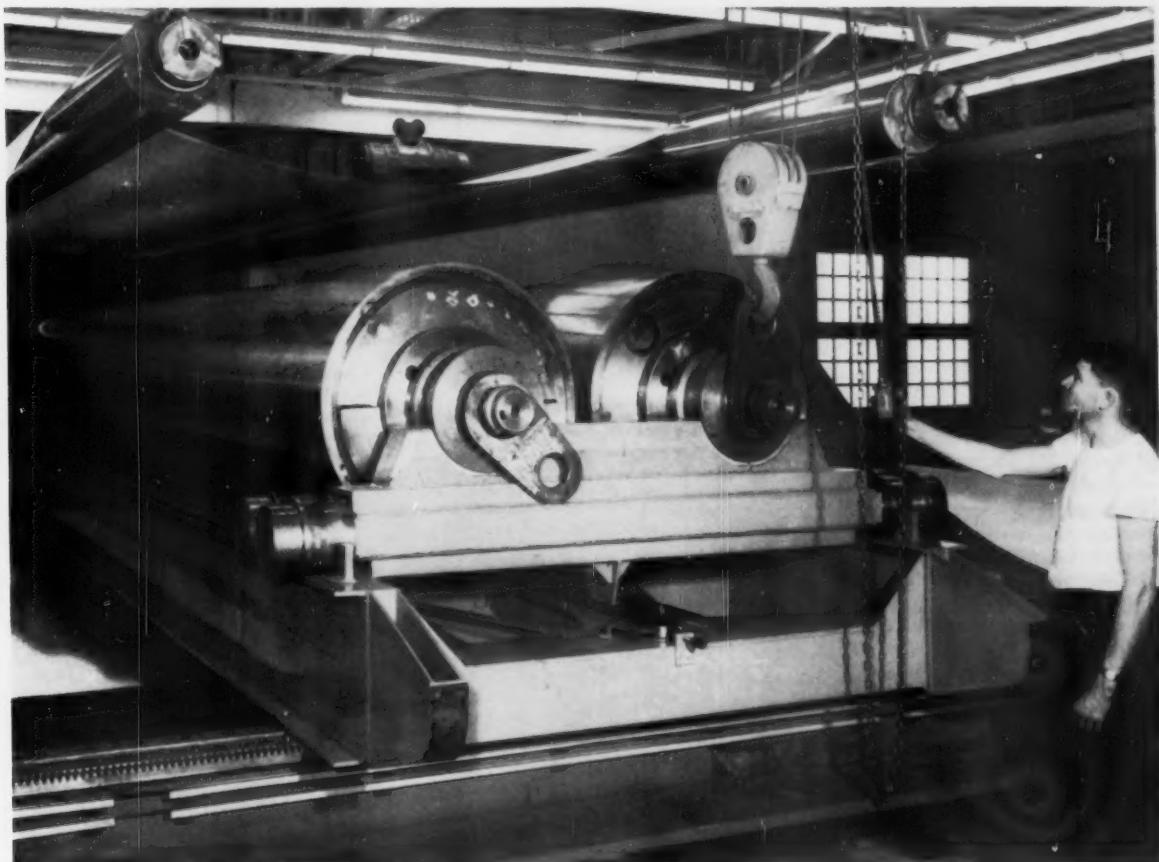
The LAMB Automatic Head Gluer glues heads up to 72" diameter, *fast, automatically!* Takes 6 to 7 seconds per head, applies *thin*, economical layer of glue. Makes better looking package, eliminates danger of glue dripping on roll ends. Available with one or two spray heads, depending upon requirements.

WRITE—let us know your head gluing problems! Folder available. No obligation.

Since 1906

LAMB-GRAYS HARBOR CO., Inc.
HOQUIAM, WASHINGTON, U. S. A.
PHONE: HOQUIAM 1000

An Appleton wire is about to receive its final inspection. These two gleaming cylinders simulating the breast and couch rolls of a paper machine are automatically positioned. The great belt of wire cloth will be revolved on these rolls, conformed to a predetermined length, meticulously inspected . . . then painstakingly packed for shipment. This careful attention to detail is among the many good reasons why scores of mills choose AWW as their major source of Fourdrinier wire cloth. We invite you to call your Appleton Wire Works representative to learn how our modern equipment and experienced men can best serve you.



APPLETON WIRES ARE GOOD WIRES

Appleton Wire Works, Inc. Plants at Appleton, Wis. and Montgomery, Ala. International Wire Works, Menasha, Wis.

ORREN E. HURD is now asst. mgr. for International Paper Co.'s Otis mill in Chisholm, Me. . . Shell Chemical Corp.'s new Industrial Chemicals div. has named E. S. ROBB mgr. of manufacturing; K. R. FITZSIMMONS, mgr. of marketing, and D. L. YABROFF, mgr. of research and development. . . PAUL E. LAVALLEY becomes mgr. of mechanics research at the Fiber Products Research Center Inc., Beaver Falls, N. Y. . . WILLIAM M. CRAWMER joins Rust Engineering Co. as staff consultant in engineering, specializing in pulp and paper mills. He was with Mead Corp. as pulp mill supt. at Kingsport, Tenn.

ZOLLY C. VAN SCHWARTZ is now technical consultant for C. A. Norgren Co. . . Dr. E. I. STEARNS is technical mgr. for American Cyanamid Co.'s dyes dept. With Cyanamid 25 years, he is holder of some 20 patents in the field of physical chemistry. . . Vice Pres. GERALD W. HARRIS of J. M. Huber Corp. has moved to the new offices of the Industrial Products dept. at 630 Third Ave., New York 17. Tel: YUKon 6-8484.

M. L. HERZOG, corporate vice pres. of Olin Mathieson Chemical Corp., is now located at the New York, N. Y. offices of the vice pres. for production and engineering. . . P. C. BROWNELL, vice pres. formerly in charge of the Ecusta Paper div., is now vice pres. for Ecusta paper and film. A. J. LOEB moves up as Ecusta packaging div. vice pres.

KENNETH H. WAHL and HAROLD H. HOOD are new northeastern sales representatives for Allis-Chalmers Mfg. Co.'s industries group. . . FRANK DICKSON, special application engineer for Black-Clawson Co. and at one time plant engineer for Bowaters in Corner Brook, Nfld., died recently. . . T. E. "TED" DETCHER has joined J. W. Rouse Construction Corp. as sales mgr. . . JOHN M. SEARCH is new sales representative for Hubinger Co. in metropolitan New York. LOU O. CARLISLE is a Hubinger special technical service representative. . . HARRY J. BUNKE, Oxford Paper Co.'s vice pres. for engineering, relocates at New York executive offices.

Jerome Kinoy Co., Yonkers, N. Y., has been named manufacturers representative for Appleton Machine Co. . . ROYAL V. MACKEY JR. is upstate New York representative for the Silicone Products dept., General Electric Co.

FRANK JANES, former sales supervisor in the Decatur, Ill. office, has been promoted to industrial and chemical sales rep. in the Pittsburgh area for A. E. Staley Mfg. Co. . . VINCENT P. PURCELL has been made sales mgr., industrial tur-

**E. Way Clarke, Vice Pres.**

. . . of Knowlton Bros., a Watertown, N. Y. specialty paper manufacturer. He has been with the firm 45 years and since 1941 has served as production mgr. and purchasing agent. He will continue these functions as vice pres.

**Lyman A. Beeman Jr., Vice Pres., Finch, Pruyn & Co.**

Previously asst. to President Lyman A. Beeman Sr., he retains his duties as merchandising mgr. in charge of sales and advertising. A graduate of Williams College, he joined the firm in 1950 in sales.

**J. Raymond Curtis
Named by Scott Paper**

. . . as director of its new Operations Research div., Chester, Pa. He will direct the application of higher mathematics and high-speed computing devices to Scott's complex distribution and operations functions. Asst. director is CLIFFORD E. McCARTY.

Mr. Curtis joined the firm in 1935 and was named to his most recent position as director of mechanical research in 1953. He is a member of TAPPI's engineering research and machine design committee. Mr. McCarty has been with Scott since 1954 and was most recently chief automation research engineer.

**Dr. D. K. Smith Promoted
by Rayonier Inc.**

. . . to asst. mgr. of the Eastern Research div., Whippoor, N. J. Dr. Smith, holder of a Ph. D. from Purdue, joined Rayonier in 1954. He will be responsible for research coordination and customer contact at the New Jersey unit, the third and largest of the firm's research centers. The two others are at Shelton, Wash., and Vancouver, B. C.

**Charles G. Dynes, Asst.
Gen. Sales Mgr. for H&W**

Mr. Dynes' appointment was reported by the Hollingsworth & Whitney div. of Scott Paper Co. He will move from the New York office to the Chester, Pa. headquarters in late spring. A veteran in the industry, Mr. Dynes joined H&W in 1945 as director of sales planning. He became asst. vice pres. in 1952 and in 1954 was named Eastern sales mgr. During World War II he served as deputy director of the Paper div. of the War Production Boards.

Succeeding Dynes is THOMAS G. CURTIS, formerly asst. Eastern sales mgr. He joined H&W in 1946 as a sales trainee.

**A. P. DeSisto, Plant Engineer**

. . . for Brown Co.'s Paper div., including Cascade and Riverside mills—with seven machines, as well as the towel converting dept. He joined the Berlin, N.H., firm following graduation from Northeastern Univ's mechanical engineering school and has served the Bermico mill as plant engineer.



full, free digester discharge

Digesters blow fast and clean with **YARWAY** Seatless Blow Valves.

The hollow sliding plunger has no pockets where wood chips or tramp materials can hang up.

All Yarway Digester Valves have full pipe area, permitting fast discharge with minimum pressure drop. Comparisons show greater discharge area—reducing blowing time, increasing number of cooks.

Scores of pulp mills report lower operating costs and increased production due to YARWAY Digester Blow Valves. One large mill found savings in operation and maintenance the first year more than paid the cost of their 4 new Digester Valves!

YARWAY Seatless Digester Valves can be furnished either with electric motor or hydraulic cylinder units. Both are remote controlled. Bulletin B-441 gives the whole story. Write for it.

YARNALL-WARING COMPANY

103 Mermaid Avenue, Philadelphia 19, Pa.

BRANCH OFFICES IN PRINCIPAL CITIES

• **DIGESTER BLOW VALVES**

HYDRAULIC-OPERATED Yarway Digester Blow Valve—one of six installed at large North Carolina paper mill.

MOTOR-OPERATED Yarway Digester Blow Valve—one of eight installed at large Canadian paper mill.

YARWAY

bines, for General Electric Co. at Fitchburg, Mass. He formerly served the industry in the Pacific Northwest.—Maurice R. Castagne.

Sorry!

On page 122 of our Jan. issue was an item, "Martin H. Rubeck, Albany Engineer." Unfortunately, the picture used was that of George Marsanski, also of the Albany Felt staff. The error was further compounded by the fact that Mr. Rubeck's given name is "Merton" and not "Martin."

Vogt Heads Waterproof Assn.

R. B. VOGT of Thilmany Pulp & Paper Co. was elected president of the Waterproof Paper Manufacturers Assn. Inc. at the group's recent annual meeting in Chicago. Named vice pres. was ROBERT W. HANNAH, Albemarle Paper Mfg. Co.

Three new directors elected include: Mr. Hannah; DAVID M. WEIL, Cromwell Paper Co., and DOUGLAS E. DONOVAN, Specialty Converters Inc.

DERNELL EVERETT and T. K. HESTON were elected secy.-treas. and asst. secy.-treas., respectively. Appointed counsel

was CLARENCE K. MARION.

A highlight of the annual banquet was the presentation to the retiring president, R. H. ANDERSON of American Sisalkraft Corp., of a 16 mm. motion picture camera in recognition of his two years' service.



E. K. Ludington Jr. R. H. Ayers

Chase Bag Elects Key Officers

ELLIOT K. LUDINGTON JR. has been elected exec. vice pres. of Chase Bag Co. He was formerly vice pres. i/c of the Paper Bag div.

Effective March 1 FRANCIS H. LUDINGTON JR. became vice pres. and treas. succeeding CHARLES S. SHELDON, who retired on that date. Mr. Ludington was formerly vice pres. i/c of production. At the request of the board of directors, Mr. Sheldon will remain through 1959 as a consultant on financial matters. Other executive appointments reported by the nation-wide manufacturer of packaging products included: W. N. BROCK, vice pres. and gen. sales mgr., vice pres. and director of sales; H. B. RUE, Textile div. sales mgr., vice pres. and gen. sales mgr.; JOHN A. BREWSTER becomes vice pres. and director of West Coast operations while continuing as branch mgr. at Portland, Ore.; R. H. AYERS, Paper Bag div. sales mgr., divisional vice pres.; E. S. ELGIN, sales mgr. of the Specialty div., vice pres., Plastics div., and JOHN A. BOOK, formerly director of labor relations, director of industrial engineering and labor relations.



A. Thomas Hussey, Pulp Sales in Northeast for St. Regis

Mr. Hussey, a 1954 graduate of Georgetown U., joined St. Regis' kraft pulp and paper training program that same year in Jacksonville. In 1955 he was assigned to a manufacturing position in New York City; joined the kraft division in 1957. He was appointed kraft pulp sales rep. in Chicago in Jan. 1958 and now succeeds BILL CROSBY in New England and New York State. Mr. Crosby, on leave of absence, is attending Harvard Graduate School of Business Administration, Cambridge, Mass.

Effluent and Water Treatment Tanks



**Beautiful Glazed Tile for
Complete Corrosion Resistance**
•
**Comparable in Cost to Concrete or
Steel... No Continuing Maintenance**

Stebbins SEMTILE and SEMBLOCK® tanks are, in effect, reinforced concrete structures faced on both sides with vitrified tile. No form work is required. Contours and dimensions can be varied to fit all types of specialized equipment.

Installations can be made under a contract which covers everything from the original design, based on full knowledge of the chemical, physical and mechanical requirements, to the finished job ready for use.

Write for complete information



STEBBINS Engineering and
Manufacturing Company

WATERTOWN, N. Y. • PENSACOLA, FLORIDA

STEBBINS ENGINEERING CORP. — TOWER BLDG. SEATTLE, WASH.

CANADIAN STEBBINS ENGR. & MFG. CO., LTD. — TOWN OF MOUNT ROYAL MONTREAL 9, CANADA

SINCE 1884

Specialists in Design, Installation and Servicing of Linings and Tile Tanks



KEOGELS

Pregelatinized—ready to use
—beater starches.



KEOTACS

Cationic—effective—
economical wet end additives.



KEOZYMES

Enzyme converting starches for
sizing and coating adhesives.



KEOCLORS

Oxidized starches—
complete line for sizing and
coating adhesive application.



KEOGUMS

New line of corn starch
derivatives for sizing and
coating adhesive application.



KEOFILMS

Economical—controlled
viscosity thinboiling starches
for special sizing
applications.



TO LOWER COSTS...

call on Hubinger Technical Service.
You can depend upon our laboratory
facilities and trained field
personnel to supply the best and
most economical solution to your
starch and adhesive problems.

*There's More to Buying Starch
than Getting a Good Product...*

**TO IMPROVE QUALITY
SPECIFY...**



**STARCHES ...for every
Paper Mill Operation!**

There are OK BRAND products—
made especially for every paper mill operation that
calls for starches and adhesives. Best of all,
there is no extra tariff on any of these top-quality
Hubinger items. If your mill needs special
starch products to meet improved quality or
strength specifications, let our nearest paper-starch
technical service representative study your needs.
He is prepared to quickly offer valuable aid.
Just phone or wire us.

THE HUBINGER COMPANY

Keokuk, Iowa

NEW YORK • CHICAGO • LOS ANGELES • BOSTON • CHARLOTTE • PHILADELPHIA

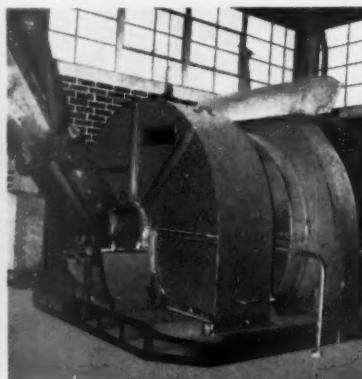


Strictly Personal

Bartosiewicz Appointed To Commerce Department Staff

JOHN J. BARTOSIEWICZ has joined the pulp, paper, and paperboard staff of the Forest Products Division, BDSA, U. S. Department of Commerce, Washington, D. C., as program executive for paperboard.

His federal career began in 1950 with the Federal Supply Service where he tested paper and paperboard. He later was an economist with the Office of Price Stabilization. For the past four years, he served as a statistician with the Bureau of the Census, specializing in pulp, paper, paperboard and converting industries.



BETTER CHIPS means BETTER cooking YIELD

- MADE IN DISC DIAMETERS FROM 36" TO 153".
- COMPACT, MURCO ROUND LOG PULPWOOD CHIPPERS REQUIRE LESS FLOOR SPACE.

MURCO Round Log Pulpwood Chippers are designed to include the most desirable features for today's production requirements . . . the result of long and careful study of the various features that contribute to outstanding chipper performance in producing more and better chips at less cost . . . less sawdust, fewer slivers, freedom from repairs yet at the same time having production records of 100 cords or more per hour. The MURCO heavy design construction reduces vibration.

All backed by years of constant development so that each year results in an improved chipper design, the latest of which is MURCO UNI-CHIP that produces more uniform chips with less bruising.

MURCO UNI-CHIP is furnished "when specified" on all new MURCO Chippers -- or your present MURCO Chipper can be adapted to it.

MURCO ROUND LOG PULPWOOD CHIPPERS



WRITE for
MURCO Chipper booklet.

A complete and detailed story on pulpwood and wastewood chippers . . . specifications of each model . . . yours upon request. Write for it today.



D. J. MURRAY MANUFACTURING CO.
MANUFACTURERS SINCE 1883 • WAUSAU, WISCONSIN



Promoted at Bowaters

Dr. JOSEPH N. SWARTZ, formerly tech. supt. of Bowaters Southern mill at Calhoun, Tenn., has been appointed tech. director. He will also act as technical advisor to the general mgr. Dr. Swartz is a native of Montreal, Canada, and attended McGill University, receiving his doctorate there.

South

The Southern Exposure: J. M. MURRAY, Gaylord sulfate pulp and paper supt. at Bogalusa, La., has been promoted to supt. of production of the Bogalusa operations. He will have charge of all pulp, paper and board production units. ERNEST E. PECHON has been upped to sales mgr. for Louisiana of Gaylord and EDWARD B. MARTIN, has been promoted to asst. mgr. of the Gaylord southern region.

Several changes in executive responsibilities at Riegel Paper Corp. in Carolina: DR. A. L. M. BIXLER is mgr. of manufacturing services with responsibility for all technical, engineering, traffic, stores and purchasing functions; J. D. DAILEY has been made mgr. of pulp and paper production and will have responsibility for maintenance, wood, power, electrical and instrument departments in addition to pulp and paper production. J. R. COMPTON, div. controller, will be responsible for all accounting and controller functions. Other promotions: C. C. PETERS is



C. S. Huestis Heads Bleached Board Development

for Robt. Gair Paper Products Group of Continental Can Co. As gen. mgr. of the group, he will be responsible for the planning and construction of a bleach board and paper mill at Augusta, Ga. Mr. Huestis was formerly mgr. for research, engineering and development and is being succeeded by KEITH MAX, mgr. of research and development. C. A. YOUNG, previously mgr. of engineering, becomes gen. mgr. of engineering.



Courtesy: Republic Steel Kitchens

Alpha® Protein...

for faithful reproduction at reduced cost

When print is used to sell big-ticket merchandise where wife-saving features are a factor, those features must be portrayed with authenticity. See here how this kitchen scene reflects sturdy equipment, lustrous stainless steel drawer and door pulls, contoured edges, and a beautiful baked enamel finish.

Crisp detail is brought into sharp focus on Alpha Protein-processed paper. Its whiter, smoother and more uniform surface offers the best opportunity for faithful reproduction of fine detail.

Alpha Protein, a processed vegetable protein adhesive, is rigidly controlled at all stages of manufacture for absolute uniformity. It improves paper quality and lowers production costs. Write or call for complete information.

CENTRAL SOYA COMPANY, INC.

Chemurgy Division

1825 N. Laramie Avenue • Chicago 39, Illinois

This advertisement reproduced on Alpha Protein-processed paper

now asst. mgr. of production; T. J. KAYHART now chief engineer and R. O. BRANDT the power plant supt.

DANIEL FULTON, a representative of Roots-Connersville since 1948, has been named mgr. of R-C's new district sales office at 1619 Ovid St., Houston 10, Texas. . . . Colton Chemical Co., a division of Air Reduction Co., Inc., Cleveland, Ohio, has named JaRo Chem, Dallas, Texas, its sales representative.

Hats off Dept.: CRAWFORD ANDERSON, formerly with Union Bag-Camp Paper Corp. at Savannah, Ga., has been appointed power engineer of the St. Regis

Paper Co. at Pensacola. A native of Atlanta, he graduated with a B.S. in mechanical engineering from Georgia Tech.

MALCOLM B. PINEO, for the past 12 years technical dir. of Brunswick Pulp & Paper, has been appointed special asst. to gen. mgr. G. K. SINGLETON . . . and speaking of Brunswick, its junior echelon is really composed of some future admirals. MIKE BROWN, son of plant supt. J. L. BROWN, JOHN QUARTERMAN, Jr., son of JOHN QUARTERMAN of the power dept. and JOHN HICKOX, son of the maintenance dept.'s OSCAR HICKOX are students at Annapolis.—William F. Diehl, Jr.



Webster Combination Chain is strong and durable—widely used where a serviceable and economical chain is desired.

Rugged steel side bars.

Pins may be riveted type or provided with cotters. Pins are designed to prevent turning in side bars—distributing wear over full surface of pin inside the long barrel of the link.

Smoothly cored holes assure close fit over pins. Special pattern equipment and tools assure accuracy of pitch and reduce clearances between all wearing surfaces to a minimum.

Cast links are made of highest grade malleable iron or Duralal which provides 20% greater strength. Available in plain as well as many styles of attachment links to suit your specific requirements.

All Webster Chains are designed, cast, machined and tested in our Tiffin, Ohio, plant.

Webster MANUFACTURING, INC.

DEPT. PP-39, TIFFIN, OHIO

BULK MATERIALS HANDLING EQUIPMENT

Offices in all Principal Cities



Dictionary of Pulp and Papermaking Terms

By Curtis L. Brown

Animal glue—Dog patcher

Broke—End-of-the-month

Stress fatigue—Monday morning

Vortraps—Mechanism for catching four mice

Web formation—“Why don't you take me out tonight?”

Yankee machine—A northern political organization

Yeast—Not in the yeast important

Zinc—What you should do twice before you leap

Canada

W. S. CRAMP, former resident mgr. at Three Rivers, has been named mgr. of the Research and Technical dept. at the Montreal headquarters of St. Lawrence Corps. Ltd. W. K. HASTEE, asst. mgr., succeeds Mr. Cramp at Three Rivers. . . . In appointments at the company's East Angus, Que. mill L. M. MORGAN becomes board mill mgr.; J. A. TREMBLAY, pulp mills production supt., and R. PINARD, paper mills production supt.

CHARLES W. CARD is asst. to the president of Westminster Paper Co. Ltd., New Westminster, B. C. A University of Iowa graduate, he joined the firm in 1954 following experience in sales, products standards, personnel and manufacturing management at Scott Paper Co., Chester, Pa. At Westminster he continues to have responsibility for products standards and quality control. . . . Ed DUCK has been named supt. at Crown Zellerbach Canada Ltd.'s new corrugated container plant at



W. E. Breitenbach President, Alaska Pine & Cellulose Ltd.

to succeed WALTER C. KOERNER, who has been elected chairman of the board. Mr. Breitenbach had been exec. vice pres. since joining the firm from Rayonier Inc., where he was vice pres. in charge of cellulose manufacture. He came to Rayonier in 1927 as chief chemist in Shelton, Wash., and later served at Hoquiam and Port Angeles. He was an original organizer of the first section created in TAPPI, the Pacific Coast section.

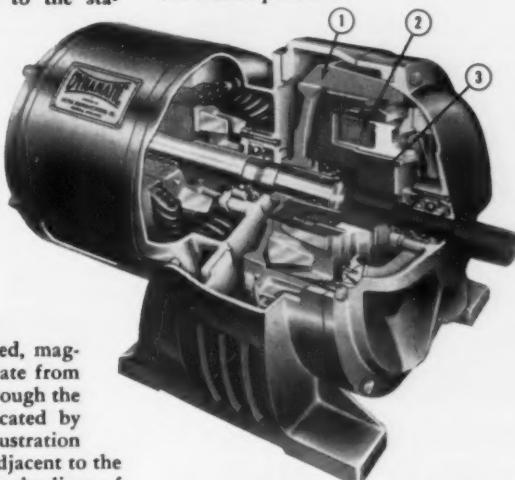
HOW DYNAMATIC Drives Provide Infinitely Adjustable Speed with AC Power

Dynamatic Ajusto-Spede® and Dynaspede® Drives operate from an alternating current power source and are infinitely adjustable from zero RPM to full output speed. Accurate control of output speed is obtained by varying the current in a single field coil.

Each Dynamatic Drive consists of a constant speed AC motor and an eddy-current coupling. Torque developed in the motor is transmitted through the coupling by electromagnetic attraction between its driving and driven members.

The driving member, or drum (1), is mounted on the end of the motor shaft and surrounds the rotor, or driven member (3). The drum is free to rotate independently of the rotor until current is applied to the stationary field coil (2).

1. Input Drum Assembly
2. Stationary Field Assembly
3. Output Rotor Assembly

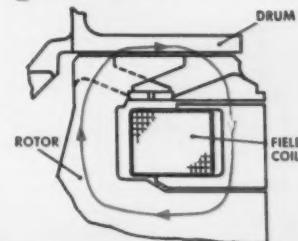


As the field coil is excited, magnetic lines of force emanate from the field coil and flow through the rotor and drum as indicated by arrows in cross-section illustration (A). Poles on the rotor adjacent to the smooth drum concentrate the lines of force into localized areas of "high flux" density in the drum's inner surface, shown in illustration (B). As the drum rotates about the rotor, these high flux areas sweep the inner surface of the drum, causing a variation of flux density that generates an eddy-current field in the drum's inner surface. Magnetic attraction between this eddy-current

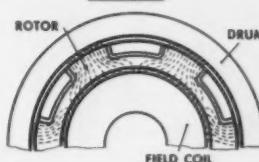
field and the rotor poles causes the rotor to rotate with the drum.

The torque transmitted from the drum to the rotor varies with the current applied to the field coil and with the "slip", or difference in speeds between the drum and rotor. Speed control with eddy-current equipment is obtained with a control system that adjusts field coil current to deliver the required torque at the desired slip.

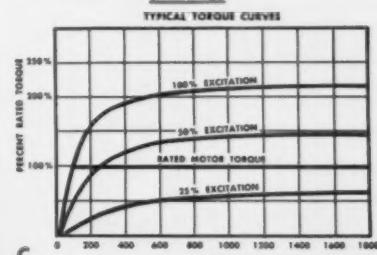
The control systems used with Dynamatic Eddy-Current Equipment operate on alternating current and require no special power source. Because of the low power required for field coil excitation, rectifying of field coil current is easily accomplished electronically. Expensive motor-generator sets are not required.



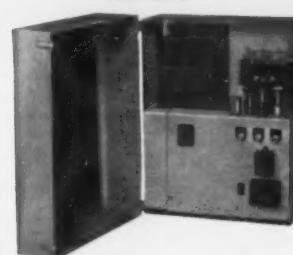
A
Flow of magnetic lines of force through rotor, drum, and stationary field.



B
Concentration of magnetic lines of force by the rotor poles.



C
Typical torque curves show torque at various values of excitation. The horizontal line is rated motor torque.



D
The electronic control systems used with Dynamatic Eddy-Current Equipment do not require a special power source or motor-generator sets.



Send for your copy of Bulletin D-582 which gives detailed information on Dynamatic Eddy-Current Equipment.

EATON

DYNAMATIC DIVISION
MANUFACTURING COMPANY
3307 FOURTEENTH AVENUE • KENOSHA, WISCONSIN

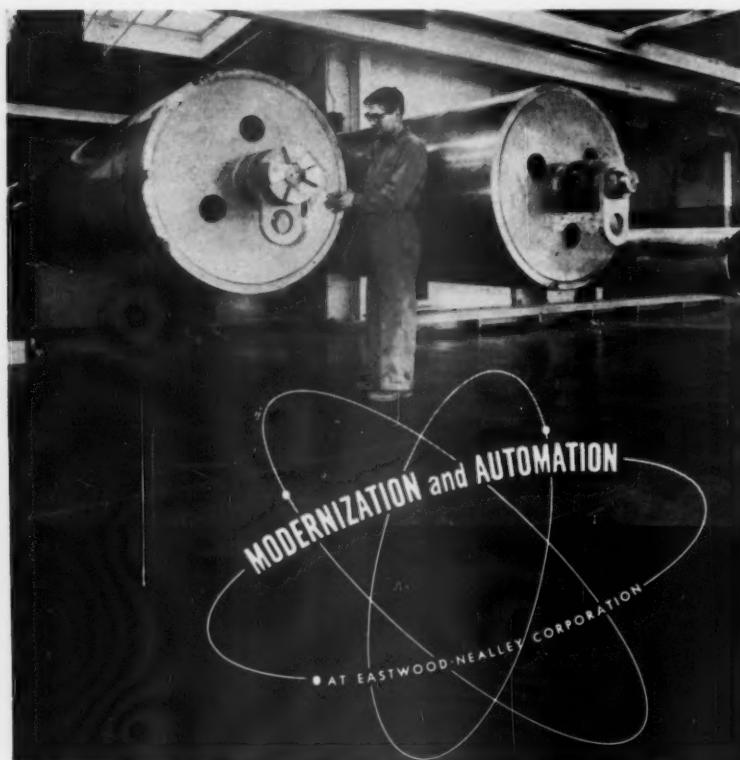
Kelowna, B. C. The operation is managed by W. T. L. ROADHOUSE.

E. S. J. BUDD, formerly comptroller for Richmond Pulp & Paper Co. of Canada Ltd., has assumed similar duties with the Kruger Organization in Montreal. L. P. FOURNIER, formerly sec. of the company, becomes vice pres. and treas., while A. S. TINDALL becomes sec. . . . D. MORRISON is located at Toronto as divi-

sional sales mgr. for Fraser Companies Ltd.

MARION F. SMITH, formerly technical director for Sidney Roofing & Paper Co. Ltd., Victoria, B. C., has joined the staff of Herbert Malarkey Paper Mill, Portland, Ore. W. CAREY continues in charge of Sidney Roofing & Paper's quality control div.

Following completion of the Tuxtepec,



THE LARGEST CENTRIFUGALLY CAST STEEL ROLLS EVER MADE — FOR THE LARGEST STRETCHING TABLE IN THE WORLD...
43 inches in diameter, over 400" wide, weighing 13 TONS each! Movement is accomplished by Eastwood-designed carriers on which the rolls are cantilevered for placement. The axle loading on the carrier wheels is greater than the wheel loading on the heaviest locomotive. Electronic controls provide ease of movement with pinpoint accuracy. **This is just one phase of our constant modernization and automation program.**


EASTWOOD-NEALLEY CORP.
BELLEVILLE NEW JERSEY



Donnacona Sales Names
Peter L. MacDougall

... gen. sales mgr. in charge of newsprint and pulp marketing. He continues as pulp sales mgr. for Howard Smith Paper Mills Ltd. and Canada Paper Co. with offices in the Sun Life Bldg., Montreal. Mr. MacDougall has been with the firm since 1936, joining pulp sales in 1946. He became mgr. in 1956.



G. D. I. Cameron Paper Mill
Supt. for Howard Smith

... at the Beauharnois (Que.) div. He has been with Howard Smith Paper Mills Ltd. since 1948, when he became a member of the laboratory staff at Beauharnois. Following assignment with the Cornwall (Ont.) div. research dept., he was assigned to Crabtree Mills. When the latter operation was taken over by Westminster Paper Co. Ltd., he returned to Beauharnois.



J. H. Robertson in New
Post at Howard Smith

Mr. Robertson becomes technical director and asst. to the director of research, Dr. G. H. TOMLINSON. He is charged with the direction and supervision of all research projects related to paper and their coordination in all mills. He joined the Canadian firm as a research chemist in 1941 and later became technical supt., Cornwall div., after which he was named head of paper research and development.

Bauer

SPECIAL CLEANERS
For Gross Trash Removal
and Maximum Protection
Against Damage



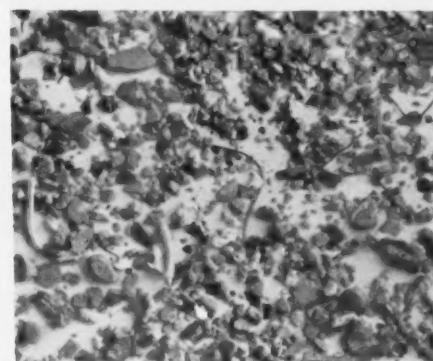
METAL TRAP

Capacity: 215 to 545 gpm.
 Protects refiners, other
 units, from nuts, bolts,
 rocks, wire, etc. Effective on
 stock up to 4% consistency.



NO. 640 SERIES
MAGNA CLEANERS

From 20", 630 gpm, to 46" and 6000 gpm. Removes gross objects as shown below. Safeguards regular Centri-Cleaners, other equipment. Excellent for waste paper systems. Operates at stock consistencies 0 to 4%.

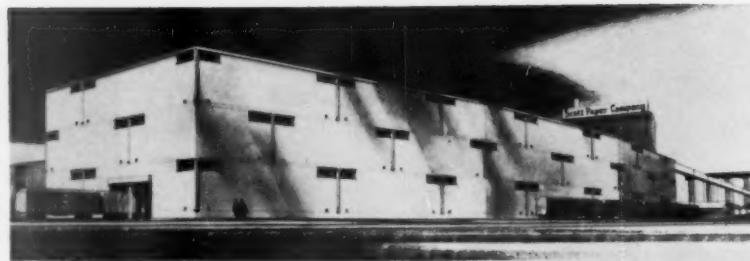


There's a Bauer Centri-Cleaner for every pulp cleaning need. The special purpose models above are just two of our complete line, which is designed to provide cleaner paper, better production, less downtime. Write for literature and specific recommendations.

THE BAUER BROS. CO.

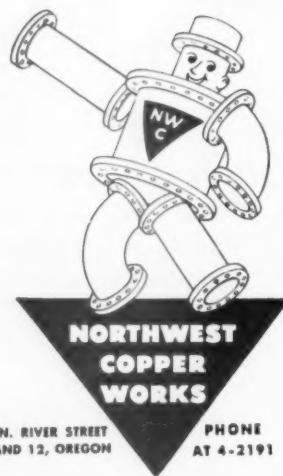
1706 Sheridan Avenue
 Springfield, Ohio

Mexico newsprint project, J. BOYD DOUGLAS has rejoined Sandwell International Ltd. in Canada. He is currently located at St. Catherines, Ont., on the staff of Hanright & Co., a Sandwell subsidiary. . . . ROLF B. BECK, chief structural engineer at the Vancouver, B. C. office of Crown Zellerbach Canada Ltd., becomes asst. chief engineer. . . . L. L. G. BENTLEY, vice pres. of Canadian Forest Products Ltd., manufacturer of bleached sulfate pulp, has been elected president of Seaboard Lumber Sales, British Columbia's big export agency. He succeeds the late HENRY MACKIN of Crown Zellerbach Canada.—Charles L. Shaw.



SCOTT PAPER'S West Coast Distribution Center will be built adjacent to firm's Everett, Wash. paper mill to provide more efficient customer service throughout western states according to LOREN V. FORMAN, gen. mgr. West Coast operations. It is one of largest shipping-warehouse installations in West.

CUSTOM FABRICATIONS



Pacific

Promotions at Simpson Logging Co.'s insulating board plant: W. B. JOHNSON from gen. supt. to plant mgr.; BILL McCANN, asst. supt. to gen. supt.; STUART McGEE, quality control supervisor to active technical supt.; GORDON CRAIG, from coating technician to process control supervisor; LARRY LATHAM, from relief shift supt. to gen. foreman; DARREL RICE, from production control clerk to promotion control supervisor. . . . At the same time Simpson Timber Co. reports the appointment of DON A. PROUDFOOT as director of marketing, thus heading the firm's new central marketing operation. RUSSELL VIGER becomes quality control supervisor. He was production control supervisor.

VERNON C. GARDNER and CHARLES P. EDDIE have been elected directors of American Forest Products Corp., San Francisco. . . . ROBERT M. HERMAN is asst. sales mgr. of Boise Cascade Corp.'s intermountain area.

Promotions in the Pulp div., Weyerhaeuser Timber Co.: A. L. HARDING, from asst. personnel mgr. at the Everett kraft mill to personnel mgr. at Grays Harbor; RAY HARBERT, asst. personnel mgr. at the Everett sulfite mill, moves to the kraft mill as asst. personnel mgr., and ROBERT E. DYER succeeds Mr. Harbert.

At Crown Zellerbach Corp.'s Camas, Wash. mill LAWRENCE C. BLAIR moves from machine room shift foreman to asst. paper mill supt., wrapping, to succeed retiring JOHN F. SMALLEY; LEONARD N. SMITH advances from steam plant shift engineer to steam power maintenance supervisor. . . . JOHN E. MILLER, asst. resident mgr. at Port Townsend, goes to CZ's Antioch (Cal.) mill as asst. resident mgr. . . . ROBERT PLANKINGTON, research chemist at CZ's Central Research dept. in Camas, transfers to the new Crown-Time mill in St. Francisville, La., as technical control supervisor. . . . JOHN E. MERRILL, chemist for Crown Zellerbach at Port Angeles, becomes technical asst. to the

SCAPA

GROUP "C"

SYNTHO- ASBESTOS Dryer Felts

incorporate our exclusive

*** "3-DECKER" STRUCTURE**

- Dacron-Nylon Working Face
- Syn-Reinforced Asbestos Center
- Syn-Reinforced Cotton Back

(Approx. 25% Synthetic Content)

They insure excellent drying, combined with unusually high resistance to thermal, chemical and mechanical degradation.

Types 3175-C (SRA) and 3480-C (SRA) supplied in all widths either open-ended or with Clipper Seam.

Type 3980-C (SRA) supplied endless with hand-spliced seam.

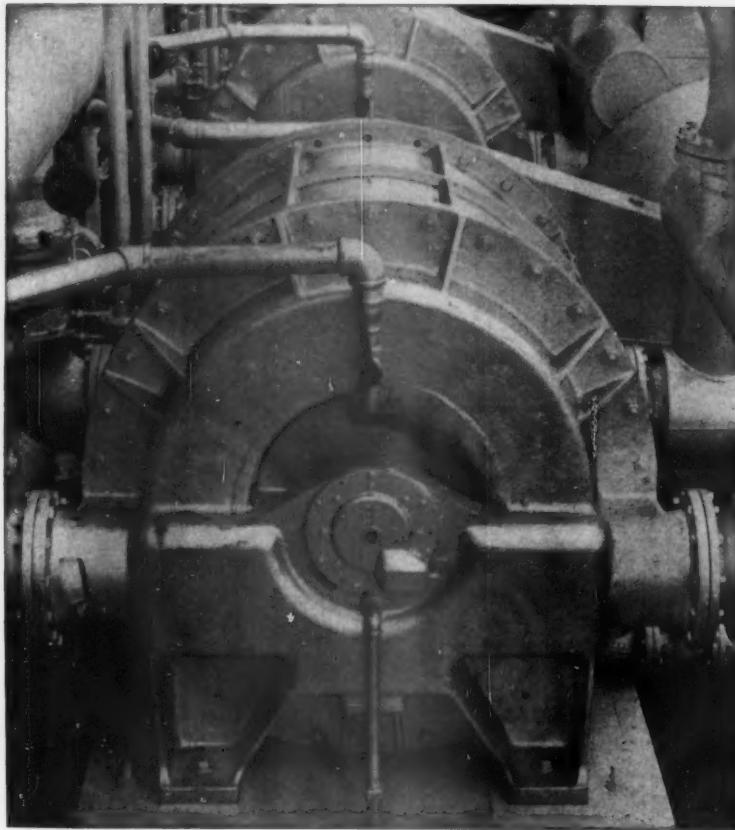
*World Patents Granted and Pending

Morey Paper Mill Supply Company
309 SOUTH STREET, FITCHBURG, MASSACHUSETTS

Sole U. S. Agents for

SCAPA DRYERS, INC.
WAYCROSS, GEORGIA

**High machine speeds?
High temperature headbox stock?
You need NASH Vacuum Pumps!**



Air from the suction rolls on paper machines carries with it substantial quantities of moisture. This considerably reduces the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump, because of the unique principle of operation, the bulk of this vapor is effectively condensed inside the pump. The total capacity of a Nash is therefore increased.

When you specify a Nash Pump it can be closely sized to the job. It is not necessary to select an over-sized unit, because the rated capacity of the Nash may be relied upon.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

NASH ENGINEERING COMPANY
441 WILSON ROAD, SO. NORWALK, CONN.



J. I. Eisenman Named Comptroller

... at the Everett, Wash. div. of Simpson Paper Co. He was formerly accounting supervisor.

paper mill supt. . . . MONRAD F. GRANNES, storekeeper and asst. purchasing agent, becomes purchasing supervisor at the CZ converting plant in Los Angeles. . . . DON OSBORNE, personnel supervisor at the West Linn div., goes to St. Francisville, La., to assist in the start-up of the new mill.

It was a boy in January for FRED J. FARRELL and his wife Jean. He is Portland sales engineer for Reliance Electric & Mfg. Co. Their fifth child.

D. S. DUFFY transfers to the Monrovia, Cal. office of Wallace & Tiernan Inc. after five years calling on the industry in the Pacific Northwest.

ROBERT M. BOYLE has succeeded JOE MURPHY as converting plant supt. for Simpson Paper Co. Mr. Murphy retired early this year.

F. M. HUGHES, gen. mgr. of Forest Fiber Products Co., Forest Grove, Ore., has been elected vice pres. of the National Hardboard Assn. . . . RICHARD KLOCKMAN, asst. supervisor for production planning and shipping at Crown Zellerbach Corp.'s Bogalusa, La., multi-wall bag plant, transfers to San Francisco as supervisor, production planning and shipping. . . . DONALD DALE WILSON, 33, personnel mgr. at the Grays Harbor div. of Weyerhaeuser Timber Co., Cosmopolis, Wash., died in November following a 10-day illness.

Managerial appointments at Fibreboard Paper Products Corp.: E. W. CAREY, vice pres. for administration, becomes vice pres., marketing, assuming the responsibilities of B. P. ALTIK, on leave because of ill health; vice pres. J. E. HAVARD has been placed in charge of engineering and resources; GEORGE BURGESS, project director of the manufacturing div., becomes divisional gen. mgr., and JOSEPH B. FAGOT, formerly director of management development, becomes gen. mgr. of the administration div. assuming staff functions formerly held by Mr. Carey. . . . CLARENCE S. JOHNSON, western district sales mgr. for St. Regis Paper Co.'s converting div., becomes vice pres. and director of Growers Container Corp., a St. Regis subsidiary at Salinas, Cal. He continues to

direct western sales of kraft and converting products.

STEPHEN J. LUSCIAN has been made southwestern sales representative for the Organic Chemical div., American Cyanamid Co. With Cyanamid since 1943 as a technical service representative for dyes, he will headquartered in Los Angeles. . . . Aeroquip Corp., Burbank, Cal., has opened a warehouse facility for its Western div. in Portland. Manager is PETER S. NAIMO, formerly of the customer service dept.—Louis H. Blackerby.

Correction

In the sales-and-earning tabulation for representative pulp and paper firms, appearing in our Jan. 1959 issue, the nine-month net per share figure given for Puget Sound Pulp & Timber Co. was \$0.31. This should have been \$0.89, the former figure being that for only the third quarter.

Esco Announces Changes

Changes in general sales staff and the metallurgical dept. at Electric Steel Foundry Co. are announced by R. W. DEWESE, v.p. in charge of sales. W. R. BARBER, assistant to the v.p. in charge of sales, assumes responsibilities of administrative mgr. of the metallurgical dept. JOE E. MCQUAID becomes general sales mgr. and DAR G. JOHNSON, Jr., former advertising mgr., joins the sales dept. as asst. general sales mgr. ROBERT L. ZWALD becomes new advertising mgr.

Pulpwood

Continental Can Co. has established a Woodlands Division in its Robert Gair Paper Products Group to manage its more than a million acres of timberlands in seven Southern states. General manager of the new division is T. W. EARLE of Savannah, Ga., who previously headed Continental's woodland operations in its Containerboard and Kraft Paper Division. The company's forests supply part of requirements of mills at Hopewell, Va.; Fort Wentworth, Ga.; and Hodge, La.; and will also help supply a new bleached foodboard mill to be built at Augusta, Ga.

ARTHUR W. GREELEY, regional forester at Milwaukee, has been named assistant chief of the U.S. Forest Service. He is succeeded at Milwaukee by M. M. (RED) NELSON, former deputy assistant chief in charge of national forest resource management in Washington, D.C. Mr. Greeley's transfer to Washington is a homecoming for him. He was born in the District Aug. 1, 1912, when his father was chief U.S. forester. As an assistant chief he will help formulate Forest Serv-



When designing or replacing floors for CHEMICALLY CRITICAL AREAS!

- * High Impact Resistance and Load Bearing Strength
- * No Water in Mix Design
- * Devran Epoxy Resin Binder Protects Against Chemical Attack
- * Positive Bond—No Mortar Joints
- * Saves Repeated Shutdowns
- * Saves Structural Floor Base
- * Placed Like Regular Concrete (Not a Skim Coat)

A request on your letterhead stating your floor corrosion problem will be followed by a personal inspection and specification by a qualified Truscon representative.





New LOW COST

Tidland AUTOMATIC DOCTOR BLADE GRINDER

AUTOMATIC . . . once the machine has been set up with the blade fixed on the rotary table, dressing continues until predetermined depth of grinding is obtained. At this point the machine shuts off automatically.

SAVES LABOR . . . takes less than 3 minutes to put blade in machine for grinding—when job has been set up there is no need for the operator to tend the machine during the grinding process.

PRECISION GRINDING . . . regardless of the blade length (up to 280") grinding will be uniform and precisely to the tolerances required. Rate and depth of grinding readily selected and set from .004 to 1/16".

LOW COST . . . the original low price represents an easily amortized capital investment.

COMPACT . . . the machine occupies less operating space than a standard office desk.

Tidland's precision, doctor-blade grinder features a heavy-duty, ball-bearing grinder quill; a ball-bearing mounted rotary table with a positive clamping device for holding the blade; automatic mechanical feed; and a self-contained coolant system.

Two models of the machine are available, a self-contained cabinet model and a bench model. Each model comes in three standard table diameters . . . 18-inch, 24-inch, and 30-inch to accommodate blades to 280 inches in length. The machine is completely automatic, however the machine may be fed manually.

For further information, write, wire or call

Tidland MACHINE COMPANY
P.O. BOX 1014, CAMAS, WASHINGTON



Stevenson Close

Named To Forestry Posts

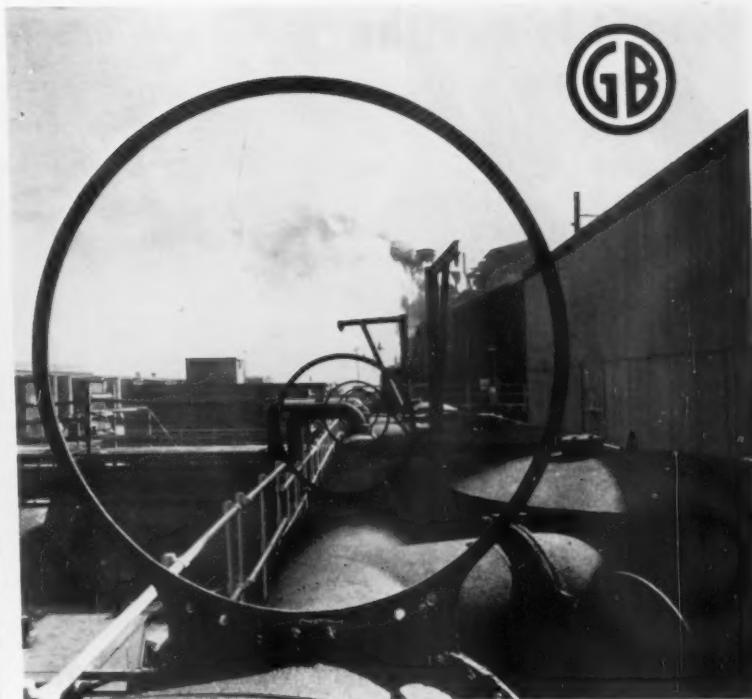
Buckeye Cellulose Corp. at Foley, Fla., has named DONALD D. STEVENSON chief forester and BOYD W. CLOSE, mgr. of forestry operations, two newly created positions. Mr. Stevenson is former forestry research mgr. and Mr. Close a onetime district forester. Their headquarters will be at Foley. Both men joined Buckeye in 1952.

ice policies. He received his B.S. degree in forestry from the University of Washington and his Master's from Yale.

ROYCE O. CORNELIUS has been appointed managing forester of Weyerhaeuser Timber Co., it is announced by EDWIN F. HEACOX, manager of the Timberland Dept. Mr. Cornelius has been assistant managing forester in the company's Tacoma headquarters since 1952. He fills the vacancy created by the recent promotion of Heacox.

ROBERT S. HYDE, a member of the tech. forest engineering staff of Southern woodlands for St. Regis at Pensacola, has been promoted to asst. to PAUL M. DUNN, director of forestry for St. Regis. Bob now calls New York City home. . . . The University of Washington's College of Forestry has published a series of three lectures on "The History of Industrial Forestry in the South" written by FRANK HEYWARD, public relations director of Crown Zellerbach's Gaylord division. . . . ARTHUR W. NELSON, Jr., has been named gen. mgr. of the newly created Timber Products Division of the Champion Paper and Fibre Co. Among his duties will be management of Champion's 600,000 acres of timberland. . . . WALTER J. DAMTOFT, asst. sec. and director of general woods department for Champion Paper and Fibre, who holds the distinction of being the South's first industrial forester, has retired. . . . Also recently retired: DR. CLARENCE F. KORSTIAN, first dean of the Duke School of Forestry and a former pres. of the North Carolina Academy of Science. . . . JOE BRADY of Birmingham, Ala., inventor of the Brady tree girdler, received the 1958 Alabama chapter, Society of American Foresters recognition plaque.

G. W. NUTTER, formerly supt. of Crown Zellerbach's Clackamas Tree Farm, Molalla, Ore., becomes supt. of the firm's larger Neah Bay Tree Farm with headquarters at Sail River, Wash. . . . LEWIS



G-B Leads the Field in the Design of Black Liquor Evaporators for the Paper Industry

Forward thinking designs based on sound engineering principles have put Goslin-Birmingham ahead of the field in evaporator design. G-B originated several self-supporting designs for black liquor evaporators which are found in plants throughout the country. G-B is the leading supplier of evaporators to the kraft mills of the Southeast.

Contact Goslin-Birmingham for more complete information.

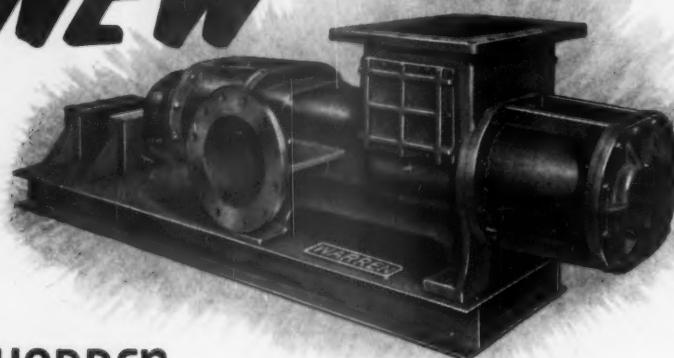


GOSLIN-BIRMINGHAM
MANUFACTURING CO., INC.
BIRMINGHAM, ALABAMA

**FILTERS • EVAPORATORS
PROCESS EQUIPMENT
CONTRACT MANUFACTURING
including HEAVY CASTINGS**

Here it is . . . the

NEW



WARREN

#11 HIGH DENSITY SCREW PUMP FOR
CAPACITIES UP TO 750 TONS PER DAY *

High Density Screw Pump*
that costs less than any other method
of moving high density stock

Take lower initial cost . . . and add to this the fact of proven production economies. Then you'll see why the paper and pulp industry is hailing this Warren Pumps exclusive as one of the soundest, most economical developments in years.

Here are some of the things this new high density screw pump will do:

PUMP capacities to 750 TONS PER DAY (depending on density)

PUMP WATER as well as HIGH density stocks

DELIVER pressures to 300 PSIG

HANDLE densities to 18% AND HIGHER

ELIMINATE need for auxiliary feeding

PUMP stock with NEGLIGIBLE WORKING

DELIVER stock WITHOUT PULSATION

AVOID the DIRT and MAINTENANCE of other methods

PERMIT DIRECT DRIVE or V-BELT DRIVE

SAVE BUILDING COSTS by installing deckers on
ground floors

This is no drawing board dream. These pumps have undergone the most severe field tests for nearly two years . . . and results are unquestioned!

*Patent pending

Tell us about your own high density stock pumping problems. Or simply write for more complete information . . . now!



PP-42

CENTRIFUGAL SCREW RECIPROCATING GEAR
WARREN PUMPS, INC.
WARREN, MASSACHUSETTS

134

W. MORCOM, until recently supervisory civil engr. at Pearl Harbor naval ship yard, joins the U. S. Forest Service regional engineering staff at Portland, Ore.

DAN E. BULFER, formerly of personnel mgt. div. of U. S. Forest Service in Washington, D. C., is appointed chief of personnel mgt. in USFS regional office at Portland, Ore. to succeed EARL D. SANDVIG who retired early this year and since joined the Territorial Forestry Organization in Hawaii as deputy territorial forester. . . . BERT F. ROSS, logging supt. of Crown Z. Neah Bay Div., retires after 40 yrs. woods experience.

LORNE F. SWANNELL has been appointed asst. chief forester in the British Columbia forest service after serving several years as district forester at Prince George and Kamloops, where he succeeded R. G. McKEE, recently named deputy minister of forests, succeeding Dr. C. D. ORCHARD, who retired. . . .

CHARLES E. MILLWOOD, of International's Georgetown mill, has been given the honorary state farmer degree of the FFA. . . . REX S. HARPER, formerly with the Florida Forest Service, has been appointed asst. professor and asst. forester of the API Agricultural Experiment Station, Auburn, Ala. . . .

The recently organized woodlands dept. of the Forest Products Div. of Olin Mathieson Chemical Corp. is TRAVIS McCLENDON. RALPH LAW is procurement mgr., E. A. FREEMAN is forestry mgr. and D. W. ROBINSON has been appointed staff forester. . . .

DR. JACK T. MAY is now professor of silviculture at the University of Georgia school of forestry. He was formerly at Alabama Polytechnic Institute. . . . RICHARD V. MILES, Jr., son of Gulf States' VANCE MILES, has opened an office in Tuscaloosa, Ala., for the general practice of forestry. . . .

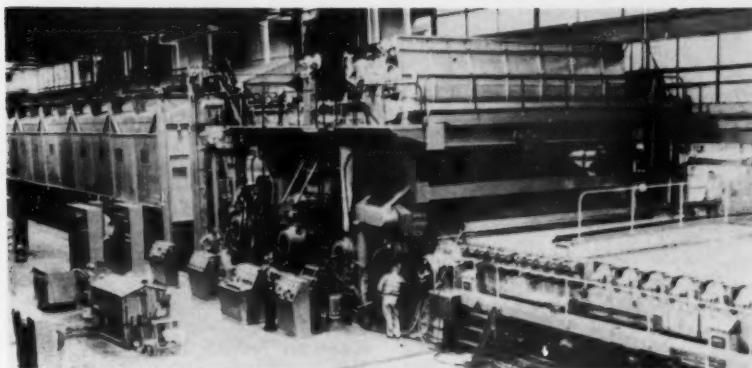
JOHN C. WITHERSPOON, formerly a forester with the American Forest Products Industries, Inc., has joined the Southern Pulpwood Conservation Assn. as asst. mgr. Well known in the South, Mr. Witherspoon resides in Atlanta with his wife and two children. He holds a degree from the U. of Iowa.

JOHN DEVEREAUX, member of Simpson Logging Co. woods staff since 1951, has been appointed logging safety supervisor of Simpson operations in Washington. . . .

DONALD E. GERBER, topographer-transitman of Clatsop logging operations, promoted to forest engineer at Crown Z's Neah Bay logging. . . .

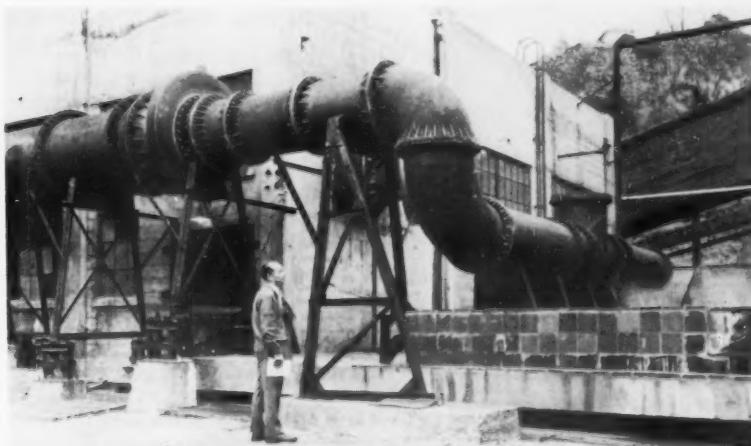
B. F. AVERY, pres. of the KVP Co., operating pulp mills at Espanola, Ont., has been touring Canada in his capacity as national president of the Canadian Forestry Assn., accompanied by National Mgr. J. L. VAN CAMP. They are spearheading plans for reorganization to create a federation of autonomous provincial units. . . .

Smooth Start for P-J Machine at Lufkin



This 270-in. wire \$3,000,000 Fourdrinier machine produced press-ready newsprint within 90 minutes after it was started up recently at Southland Paper Mills, Lufkin, Tex. Third machine for Southland built by Pusey & Jones Corp., it is now ready to run at 2500 fpm, its designed speed. The F-wire is 118 ft. long. The machine uses a pressure type headbox and slice with crossflow distributor. The Fourdrinier is equipped with the Pusey & Jones Rapi-Drape quick wire changing and pre-draping system, operated hydraulically, as is the 34 in. diameter breast roll. The machine has a five suction roll press part and 65 dryers, 55 being 60 in. paper dryers, eight are for felts and the remaining unit is a sweat dryer. The dryer section has high speed, enclosed gearing, steam joints with dual revolving syphons, and an automatic, motorized felt take-up and tension control. The complete dryer section is enclosed within a Ross Engineering hood. An 8-roll calender stack and horizontal track reel are 400 ft. from the headbox. The stack has electric lifting and Vickery doctors.

Heat-Resisting Stainless Proves Out

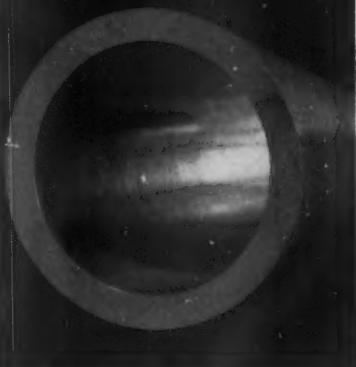


... under severe temperature and corrosive conditions in sulfite mill of Pulp Div. Weyerhaeuser Timber Co., Everett, Wash. Here L. H. "Spud" Hartman, maintenance supt., inspects 30-in. ID gas manifold handling sulfur dioxide at 1600-1800° F. between sulfur burner and Jenssen cooler.

Long-radius 90° elbow is Esco Alloy 43H high-heat casting obtained and installed during War II when specified alloys were difficult-to-impossible to obtain. Based on results of subsequent in-use experience, 43H castings are replacing old manifold components as they fail from heat fatigue and corrosion. The manifold is now 60% Esco 43H stainless, 40% chrome-iron.

quality piping from
a quality producer

**cut
corrosion
costs
with Byers
PVC Pipe**



Since PVC is a non-conductor, it is immune to galvanic or electrolytic attack. Smooth, inside and out. Does not pit, groove or tuberculate. Attacked by relatively few chemicals. Completely amorphous. Ageless. No oxidation. Immune to oxidants such as nitric acid, sodium hypochlorite, bleaches.



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won't attract rodents . . .
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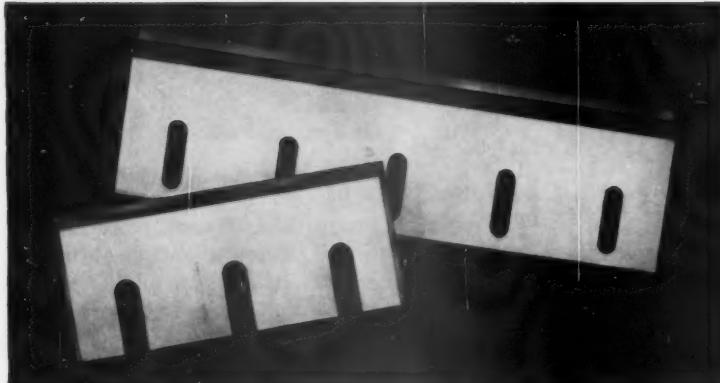
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PLANTS: Pittsburgh, Pa. • Bridgeport, Conn.
Indianapolis, Ind. • New Brighton, Pa.

MIDVALE-HEPPENSTALL COMPANY
NICETOWN, PHILADELPHIA 40, PA.

DIE BLOCKS • FORGINGS • BACK-UP ROLL SLEEVES • RINGS
INDUSTRIAL KNIVES • MATERIALS HANDLING EQUIPMENT



12th Bolton Award Contest Will End March 31

"I Want to Be Kept Informed" is the subject selected for the 12th annual Bolton Award essay contest, announces the Supts. Assn. and John W. Bolton & Sons Inc., Lawrence, Mass., joint sponsors. The contest ends midnight March 31. Entrants are asked to submit papers typed, double spaced on plain sheets, 8½ x 11 in. and confined to approximately 1500 words. Cover sheets only are to include author's name, name and address of the mill, home address and job title. Mail all papers to the Secy.-Treas., American Pulp & Paper Mill Supts. Assn., 327 South LaSalle St., Chicago 4, Ill.

Safety Record is Set By Valdosta, Ga., Mill

An all-time record for safety for mills participating in National Safety Council competition has been set by the Owens-Illinois Glass Co. paper mill at Valdosta, Ga. The record, 2,129,952 man hours without a lost time accident, covered the period from March 3, 1957, to Jan. 2 this year. The 668-day safety marathon ended when a machine tender dropped a metal pole, injuring a finger.

National Safety Council spokesmen said the Valdosta record eclipsed the previous record for the industry, held by the Georgia Kraft Co. of Macon, with 2,124,207 injury-free man hours.

Lodding Engineering Moves Into Its New Plant

Lodding Engineering Corp., makers of doctors, doctor blades, fuzz removers, showers and oscillators for showers and doctors, is occupying its new plant in Auburn, Mass., nearby its former location in Worcester. The new plant, which is distinguished by its unique construction, provides ample room for the growing needs of this company.

Revolutionary Chemical Treatment Developed By Huyck

Most recent among new developments stemming from Huyck Felt Co.'s research at Rensselaer, N. Y. is a new, revolutionary chemical treatment called HUY-5. Developed especially to improve performance and increase service life of felts running high brightness board and market pulp, the new, all-purpose, natural color treatment gives felts outstanding resistance to wear, bacterial and chemical attack, shrinkage or felting, changes in running size and hair shedding.

The new HUY-5 chemical treat-

ment has been thoroughly tested and proved by Huyck's laboratory and pilot plant operations and has undergone exhaustive testing afield in the past two years. A company spokesman stated that the need for the new treatment has been strongly expressed by operators of high brightness board and market pulp mills who attended Huyck Felt Workshops.

Monsanto Mersize Production in Seattle

Monsanto Chemical Co. will establish production facilities at its Seattle, Wash., plant for Mersize, a fortified rosin size used to give water resistance to paper and paperboard. The new unit was scheduled for operation early in 1959. It will supplement existing production of Mersize at Baxley, Ga., and Montreal. Bulk storage facilities now are operated at Seattle.

Lloyd D. Shand, manager of paper chemical sales, Monsanto's Organic Chemicals Division, says Mersize sales in the area are expanding. Current paper production in the Western U.S. is estimated at close to 4,000,000 tons annually. It is predicted this will increase to about 5% million in 1965. Of the nation's total paper production, about 32 million tons annually, Mr. Shand estimates 20% is processed with fortified rosin size.

Yarnall-Waring Celebrates

The Yarnall-Waring Co., Philadelphia manufacturer of Yarway seatless blow-off valves, impulse steam traps, and other steam plant equipment, recently celebrated its 50th year of operation. At its Chestnut Hill plant over 400 customers, suppliers, distributors and neighbors attended an "Open House." Nearly 600 employees and families were on hand two days later for a "Family Night" dinner.

Bernard G. Waring and D. Robert Yarnall, founders of the firm and now honorary chairman and chairman of the board, respectively, greeted open house guests. President Frank W. Miller presided at the dinner, at which he announced a scholarship award program for children of employees.

New Allis-Chalmers Labs

Allis-Chalmers Mfg. Co., has completed new engineering, development and research facilities in Greendale, Wis., Milwaukee suburb, about two miles south of the company's West Allis Works. An initial group of approximately 100 scientists, engineers, draftsmen, technicians and administrative personnel moved into the new laboratories in September. In full operation, they will employ nearly 200.



ESCO LTD'S NEW FOUNDRY IS NOW IN FULL PRODUCTION, according to B. P. Nyline, pres. The modern foundry at Port Coquitlam, B.C., will supply Esco Ltd. with alloy steel castings from one-half to 5,000 lbs. in weight. Offices and warehouses are located in Montreal, Toronto, and Vancouver with resident salesmen and dealers in other major parts of Canada. William Baily is mgr. of the Foundry div., Richard Ridgley is foundry supt. and Trevor Wood is office mgr.



Mill usage of this bright attractive color in bond, offset, mimeo and manifold grades produced from bleached sulphite, bleached neutral sulphite semi-chemical and bleached sulphite pulps has repeatedly shown marked economy in formulations for blue and green shades.

Chlorantine Fast Blue P-8GLL is somewhat greener in shade than our Direct Brilliant Sky Blue P-6B Ex. Conc. Its shade and strength permit partial replacement of the more expensive Alizarine Sapphire Blue types to effect appreciable economy without undue loss of brilliance.

Chlorantine Fast Blue P-8GLL possesses excellent light fastness, good fastness to water, acid and alkali, and is easily discharged with hypochlorite solutions. It is recommended for dyeing appealing blue shades of good brilliance on specialty converting papers ranging from tabulating card and file folder stocks to facial, facial toilet and napkin tissues.

 We shall be pleased to furnish information on mill-proved formulations showing marked cost reduction over dyes in general use for many blue and green shades.

CIBA Company Inc., Paper Chemicals Department
627 Greenwich Street, New York 14, N.Y.

PICTURES OF PEOPLE IN THE NEWS



B. H. Williams Named Mgr.

... of Western div., Dominion Engineering Co. Ltd., Vancouver, B. C. He succeeds G. E. PLANT, who has been transferred to Montreal. Mr. Williams has been active in the division more than two years.



Manchester Machine Names J. Robert Hanzlik

... asst. chief engineer at Middletown, O. He joined the firm in 1954 as a senior design engineer. Previously he had been with Scott Paper Co. as a project engineer at plants in Pennsylvania and Wisconsin.



Huyck Felt Appoints Three

Huyck Felt Co., Rensselaer, N. Y., reports the appointment of JOHN C. HINTERMAIER as mgr. of the physical research section in the Felt Development dept. HANS H. DIRZUWEIT becomes mgr. of papermaking felt development section. Mr. Hintermaier has broad experience in the textile and paper industries and in his new position is responsible for the development of new weaves, felt constructions and techniques in the improved use of synthetics in felt manufacture. Mr. Dirzuweit was asst. mill supt. at Spaulding Fibre Co. before joining Huyck. He will work closely with paper mills in the development of new and improved felt designs.

OTTO BERGGREN has been recently named field service engineer for eastern New York and portions of Vermont. He was formerly on the staff of the development dept. and was at one time asst. supt. at Stonebridge Paper Corp.



J. Cameron Brown Jr. in New Sales Post for Impco

Mr. Brown, a graduate of Rensselaer Polytechnic Institute, has been for four years sales engineer for Improved Machinery Inc. In his new assignment his territory includes Connecticut, Rhode Island, New Jersey, Delaware, central and western Massachusetts, southern New York and eastern Pennsylvania.



Green Thompson

Heading New Office

CURTIS E. GREEN, formerly mgr. of materials handling dept. of J. E. Sirrine Co., and JOHN W. THOMPSON, onetime chief engr. of Jervis B. Webb Co. of Georgia will direct activities of the new B. L. Montague Co., Inc., conveyor sales and engineering div. at Greenville, S.C. Mr. Green will be director of conveyor sales and Mr. Thompson, chief engineer.



Michel Miller

In New Posts for Bauer

DONALD P. MICHEL has been named chief electronic engineer for Bauer Bros. Co. in a trend toward automation at the Springfield, O. plant. He joined the firm in 1954. In another promotion SORUS MILLER joins the Plant Products div., a recently created part of the Bauer sales organization. With extensive experience in the sulfite pulping industry, Mr. Miller was at one time with G. D. Janssen Co. Inc., Massena, N. Y.



T. H. Scanlon Named Project Mgr.

... at Rust Engineering Co. and has been placed in charge of the Oxford Paper Co. contract for a new kraft pulp mill at Rumford, Maine. Mr. Scanlon was transferred from Rust's engineering dept., where he was a staff and project engineer specializing in paper mill design and construction.



Cloyd L. Betzer, Technical Mgr.

The Pfaudler Co. reports that Mr. Betzer will be responsible for all engineering, research and development activities with the exception of production and industrial engineering. He continues as chairman of the development coordinating board at this division of Pfaudler Permitit Inc. He joined the Rochester, N. Y. firm in 1957 on the staff of the vice pres. for manufacturing.



Youngchild ... Fromm ... Reinschmidt

In New Posts at American Cyanamid

Ken E. Youngchild has been promoted to sales mgr. for American Cyanamid paper chemicals dept., a new post. With Cyanamid since 1937, he is a graduate of the U. of Wisconsin and has been Southern regional mgr. George E. Fromm moves from Midwestern regional mgr. to Southern regional mgr. He joined Cyanamid in 1939 at the Stamford laboratories. William E. Reinschmidt, with Cyanamid since 1955, is a graduate of Louisiana State U., has been in sales and service in the South, now becomes Midwestern regional mgr.

**THIS IS
DRYDEN
PAPER
COMPANY**



**Customer's one-word report
on this pulp: "WONDERFUL!"**

Back in the Spring of 1956, one of America's leading paper makers began to look for ways to improve their products. They realized that, to get a better product, they had to start with a better pulp.

The engineers and lab men at this plant heard reports about a new pulp coming down from Canada—the two-stage chlorine dioxide Northern bleached sulphate pulp that Dryden Paper Company would soon be producing at its new Dryden, Ontario, plant. So these paper men ordered a fifty-pound sample of Dryden, unbleached, so that they could bleach it and follow it through into paper in their own labs.

Their one-word report: "Wonderful!"

Soon after the opening of the Dryden plant in 1957, they contracted for several thousand tons of Dryden pulp for each of the next five years...but they soon came to rely on Dryden as their *only* source for quality pulp, continually upping their shipping orders. 1958 shipments are nearly three times the original tonnage.

Compare Dryden Bleached Sulphate with the best quality pulp you know. You, too, will say it deserves all the laboratory endorsements—and *all the production testimonials*—it now enjoys. Order a trial shipment today.

DRYDEN PAPER COMPANY, LIMITED
DRYDEN, ONTARIO, CANADA

SOLD BY: Anglo Paper Products, Ltd.

2055 Peel Street, Montreal 2, Quebec
67 Yonge Street, Toronto 1, Ontario

SALES REPRESENTATIVES IN THE UNITED STATES:

Northeastern Paper Sales, Inc.
400 Madison Avenue, New York 17, N. Y.
20 North Wacker Drive, Chicago 6, Ill.

60"

66"

69"

New...
LAWSON Pacemaker
Hydraulic Clamp
Trimmers

More than 60% faster and 20% heavier than comparably sized guillotines, these amazingly accurate Lawson Pacemaker Trimmers are really new from the ground up! Adjustable center bearing on knife bar... adjustable gibs... rear table-slot closing device... performance-proved hydraulic clamping... built-in air cushion device... truly flexible Adjustable Contour Clamp... exclusive electronic spacing to .002"... no other trimmer offers so many profit-stretching advantages! The Lawson Pacemaker Trimmers are as modern as tomorrow. Write, wire or phone for full details, today.

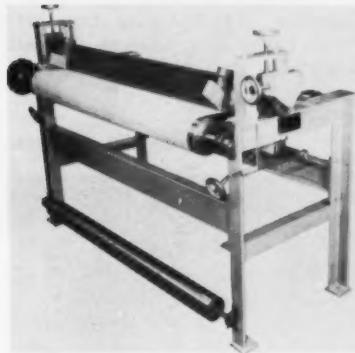
THE LAWSON COMPANY

Division of Miehle-Goss-Dexter, Inc.

2011 West Hastings Street, Chicago 8, Illinois



Knife-Over-Blanket Coater
... Versatility for Converters



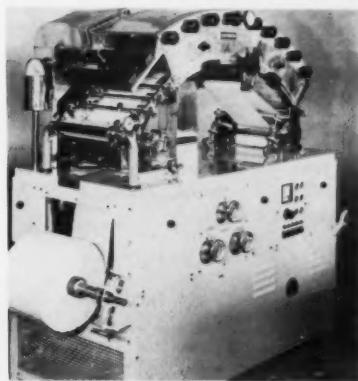
Applications: For coating paper and fabrics.

Advantages: The unit is said to offer versatility in blade adjustment and blade pressure.

Specifications: The manufacturer declares that the equipment rounds out the complete line of Dilts coating machinery for the converting industry.

Supplier: Black-Clawson Co., Dilts Div., Fulton, N. Y., U. S. A., and Black-Clawson International Ltd., 18 Savile Row, London W. 1, England.

Jagenberg Laboratory Coater
... with Push Button Control



Applications: For use in mill and research laboratories coating one side of paper or board with aqueous and other solutions of medium or low viscosity.

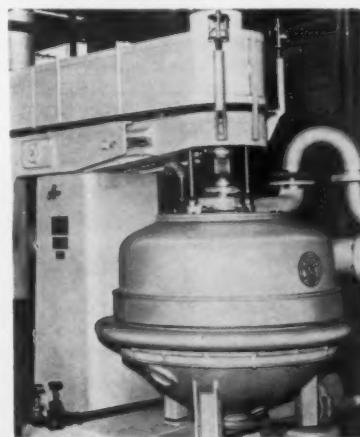
Advantages: A wide range of coatings can be applied by one-, two- or three-roller coating stations in connection with air-knife, smoothing-roll (or a combination of the two) and reverse-roll coating systems. Paper, board, foil and suitable fabrics can be handled. According to the manufacturer, cleaning "requires only a few minutes" be-

cause of special design that allows a quick change from one job to another.

Specifications: Drying is by individually-controlled infra-red lamps and/or hot air and electrically-operated bottom heaters. Operation is by push button, and scales are provided for every adjustment. Expansion shafts are provided for rewind and unwind. One side of the dryer can be removed to thread paper, and accurate production data is read from instruments. The web speed is adjustable steplessly from 1 to 65 ft. per min.

Supplier: American Paper & Pulp Co., Inc., 300 Fourth Ave., New York 10, N. Y., U. S. A., Oregon 4-3920 (or Pearce Development Co., 1606 E. 30th St., Cleveland, O., U. S. A.); and Jagenberg-Werke AG, Himmelgeister Strasse 107, Duesseldorf, West Germany, Tel: 330141.

High-Capacity Centrifuge
... Reduced Power Requirement



Applications: For liquid-solid separation or the separation of liquids of different specific gravity.

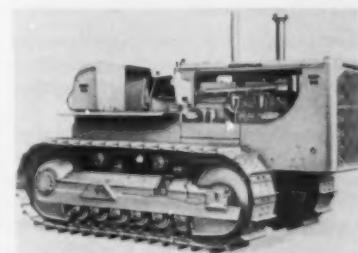
Advantages: This Merco H-30 has increased capacity and higher operating efficiency than the existing Model 30 and permits higher rotor speeds than were formerly possible. The 37-in. rotor operates at speeds of up to 3300 ft. per min. It is claimed that all available space has been utilized, dead loads eliminated and all areas tested by strain gage to assure balanced loads and complete safety. The manufacturer claims the principal advantage to be substantial reduction in both initial and operating costs on a per gallon basis.

Specifications: Model H-30 handles up to 600 gal. per min. with reductions

in power requirements. It features overhead suspension, hydraulic hoist, an internal recycle system and Camloc nozzles.

Supplier: Dorr-Oliver Inc., Barry Place, Stamford, Conn., U. S. A., Frieside 8-7311; and Grubbens & Co., Aktiebolag, Stockholm C, Sweden.

Tractor—Series H D8
... for Forest Sites



Applications: For logging, heavy construction and similar jobs.

Advantages: This bigger and more powerful model in the D8 series is said to provide "more profitable operation" and is capable of increased speed over its predecessor. It is available in both direct drive and torque converter models. The use of double reduction final drive gearing provides ground clearance of nearly 20". Flywheel horsepower has been increased 18%. The undercarriage is designed to provide "a new high in strength and durability," and lifetime-lubricated rollers and idlers have been introduced for the first time. More material is placed under the load zone, and steel hubs are now used to replace cast iron. Tractor weight is distributed over a greater bearing area. Greater beam strength is said to result from increased grouser thickness. The entire power train is pressure-lubricated with completely filtered oil. Transmission is directly reversing in all six speeds, and design features "facilitate operator comfort and visibility."

Specifications: Engine horsepower of the D8 Series H at the flywheel is 225, drawbar horsepower of the direct drive model 180. Power is provided by a six-cylinder diesel. Width of the standard track shoe is 24". Gage of both models is 84", and over-all length is 17' 3/4". Operating weight of the direct drive is 47,102 lb., of the torque converter 47,875.

Supplier: Caterpillar Tractor Co., Peoria 8, Ill., U. S. A., Tel 6-3311; and 55/56 St. James St., London S. W. 1, England, LEGation 3021.

Whiteness Reflectometer
... Uses Paired Vacuum Tubes



Applications: For measuring whiteness, reflectance, yellowness and opacity of white and near-white papers, textiles, plastics, etc.

Advantages: The unit can be equipped with an ultraviolet absorbing filter that may be alternated between the incident and viewing light beams to measure directly the contribution of fluorescent brightness to specimen whiteness. The instrument uses paired vacuum tubes in a null Wheatstone bridge circuit, employs a 45° geometry and has green and blue tristimulus filters.

Specifications: The reflectometer is

built in two sections identical in size and shape so that when bolted together they form a small compact unit. On the left are the light source, phototubes and a 2 1/4-in. round specimen viewing area. On the right are the measuring circuit, vacuum-tube galvanometer and digital dial. An attachment is available with which to reduce the 2 1/4-in. round specimen area to 3/8 in.

Supplier: Hunter Associates Laboratory Inc., 5421 Brier Ridge Rd., McLean, Va.

Metering Pump
... Maintenance Simplified



Applications: For metering and proportioning in the process industries.

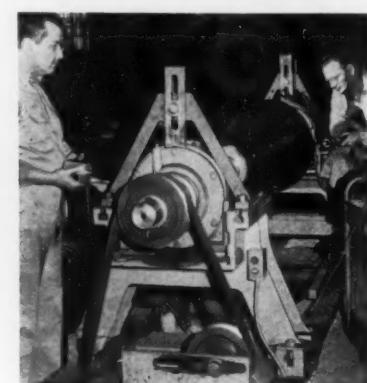
Advantages: Four Masterline models are said to boast "new standards of economy and performance". Among the new features: simplified crank type drive; improved check valve assembly;

separate motor and speed reducer; interchangeability of parts; complete servicing with common tools.

Specifications: Powered by standard NEMA foot-mounted motors, the pumps deliver payloads through a range of from a fraction of a gallon to 1,030 gph per feed.

Supplier: Hills-McCanna Co., 4600 West Touhy Ave., Chicago, Illinois 7-9500.

Jordan Plugs
... Dynamically Balanced



Applications: To reduce jordan vibration and improve operating performance.

Advantages: These dynamically balanced jordan plugs, in addition to reducing vibration, are said to lower maintenance costs, increase tackle and bearing life and improve stock quality.

Specifications: Dynamic balancing measures vibration caused by centrifugal force and locates any points of unbalance in the plug as it is rotated at the exact rpm that it is to be mill-operated. Unbalance is then corrected. **Supplier:** Emerson Mfg. Co., division of John W. Bolton & Sons Inc., 9 Osgood St., Lawrence, Mass., U. S. A., MURdock 6-6171.

Refiner

... for Double Duty

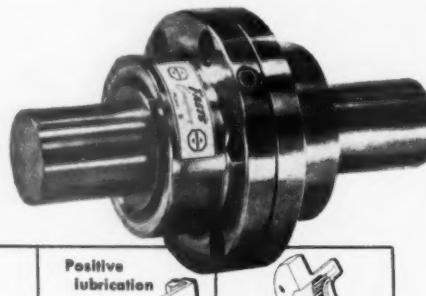
Applications: For complete refining on a continuous basis.

Advantages: The J-U-D is said by the manufacturer to combine the functions of jordan and disc refiner and to be applicable to most types and grades. It is claimed that only half the usual horsepower is required.

Specifications: Units are producing at capacities ranging from 20 to 150 tons on various finishes. The refiner is available with fully automatic or manual push button controls in full range of sizes. It is adaptable to hot stock refining (with no wood filling used).

Supplier: Noble & Wood Machine Co., Hoosick Falls, N. Y., U. S. A.; Tel. 83.

FAST'S Model B Coupling



reduces downtime and upkeep for light-to-medium drives!

Now you can profit from the durability and economy of famous Fast's couplings in a smaller and lower-cost version—available in 5 sizes for shafts $1\frac{1}{2}$ " to $3\frac{1}{8}$ " in diameter.

The Model B coupling gives you the same features that have made Fast's the world's leading coupling for over 35 years. You get the same trouble-free per-

formance, longer service life and lower maintenance costs. You also get prompt delivery because stocks are on hand to meet practically every need. Free engineering service is also available.

Write today for more details to KOPPERS COMPANY, INC., Fast's Coupling Dept., 5103 Scott Street, Baltimore 3, Maryland.

Engineered Products
Sold with Service



THE ORIGINAL
FAST'S Couplings



MEMO TO MEN
TAKING THE
NEXT STEP UP:

WHERE THERE'S BUSINESS ACTION THERE'S A BUSINESSPAPER

Inside information—when it's genuine—is invaluable when it comes to picking a winner. It's also invaluable when it comes to doing a better job in business.

Men on top and men on the way up in business know this. They're constantly on the alert for information—complete information, sound information, timely information. They get that information most consistently by habitual reading of the businesspaper they subscribe to in their particular field.

They read for profit, not pleasure. They read carefully, thoroughly—looking not only for information, but for

fresh ideas, new methods, new products they can put to work. And they find so much that's worthwhile in the advertising that they read it with the same searching concentration they devote to the editorial pages.

You can profit by emulating the reading habits of key men at every level. Subscribe to your businesspaper. Read every issue. Carefully. Thoroughly. Searchingly.

**PULP &
PAPER**

J. E. SIRRINE



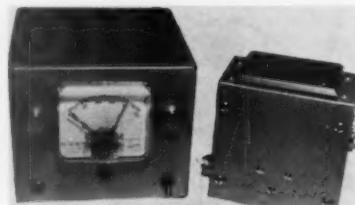
Engineers
Since 1902

Pulp & Paper Mills
Water Supply
Waste Disposal
Steam & Hydro Power
Plants
Appraisals
Textile Mills & Finishing
Plants
Surveys & Reports
**GREENVILLE,
SOUTH CAROLINA**

PULP & PAPER

Equipment & Supplies

Automatic Skip Meter ... Continuous Monitoring



Applications: For detecting "skip" on paperboard.

Advantages: This photometric instrument is said to provide continuous monitoring on the production line, thus making it unnecessary to check the paperboard visually for "skips" (shade differences ranging from light to dark) or for other visual imperfections. With slight modification, the meter is also useful in controlling color, color brightness, gloss, haze and turbidity, and in detecting misalignment of revolving rolls.

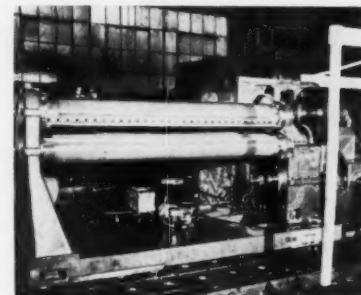
Specifications: The meter measures 7" x 7" x 6". The exposure head consists of a light source, sensing photocell, microammeter, relays and control

switches and measures approximately 6" x 6" x 3". It is mounted directly above the moving web. By means of relays, the instrument automatically rings a bell, lights a lamp, marks the surface or stops the operation whenever pre-established tolerance limits are exceeded.

Supplier: Gardner Laboratory, Inc., P. O. Box 5728, Bethesda 14, Md., Oliver 6-3600.

Cut-Off Machine

... Trimming Almost Eliminated



Applications: For fast cutting in the production of corrugated board for boxes.

Advantages: The accuracy of the machine is said to have virtually eliminated the trimming of corrugated sheets. It is also claimed that the unit cuts both maintenance and electric power costs and has greatly decreased scrap loss.

Specifications: Developed by the F. X. Hooper Box Machinery dept. of Koppers Co., the unit has rotary knives driven by a differential mechanism. Input speed is synchronized with board speed.

Supplier: Koppers Co., Inc., Metal Products Div., Scott and McHenry Sts., Baltimore 3, Md., Saratoga 7-2500.

Tilting Motor Base

... for Automatic Tension Control

Applications: For automatic belted drive tension control under changing load conditions.

Advantages: This new reaction torque tilting motor base is said to make possible more efficient use of space because of its compact design. The reactive torque is directly proportional to the horsepower, and the belt tension increases and decreases as the load varies.

Specifications: Available in bases to accommodate all NEMA sizes through frame 505, as well as for special applications requiring larger frames.

Supplier: Allis-Chalmers Mfg. Co., 1126 So. 70th St., Milwaukee 1, Wis., U. S. A., Spring 4-3600; and Allis-Chalmers International, Engineering Products, P.O. Box 512, Milwaukee 1, Wis.

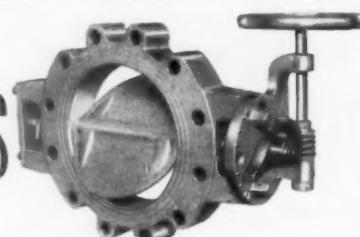
ROCKWELL

"WAFER" VALVES

- LOWER IN FIRST COST
- NEED MINIMUM SPACE
- EASY TO OPERATE

For controlled throttling or tight shut-off of air, gases, process fluids or semi-solids, Rockwell Wafer Butterfly Valves offer the advantages of rugged construction, compactness, small face-to-face dimension to fit in minimum clearance between pipe flanges.

Write for Bulletin 580.



Standard 125-150 lb. wafer butterfly valve with handwheel; also available with lever control or mechanical operators.



Rubber-lined, 300-lb. wafer butterfly valve with hydraulic cylinder for drop-tight shut-off.

W. S. ROCKWELL COMPANY

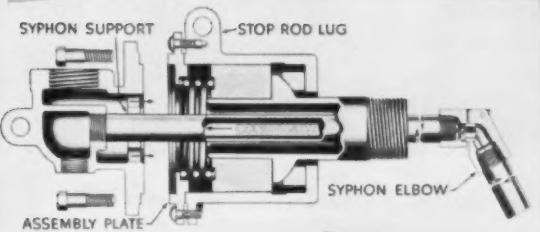
Valves-Butterfly • Slide • Diaphragm • Special

2519 ELIOT STREET • FAIRFIELD, CONN.



**The right
rotary joint
for every
need!**

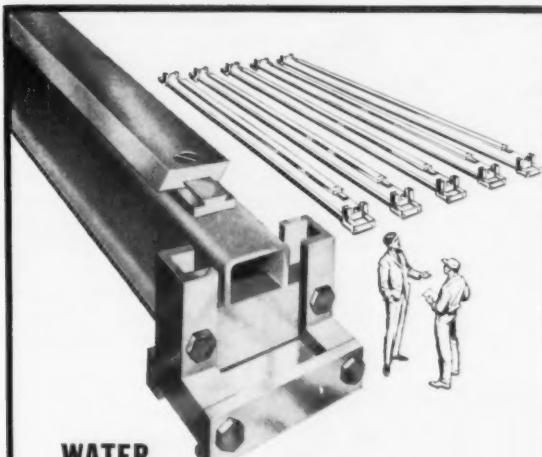
- ... ON PAPER
MACHINE DRYERS
- ... CORRUGATORS
- ... CALENDERS
- ... ROOFING MACHINES
- ... WAXERS
- ... EMBOSSEERS
- ... PRINTING PRESSES



Type "SB-1" shown is completely self-supporting. Like all Johnson Joints it has no packing, needs no lubrication or adjustment. The siphon elbow replaces unwieldy curved condensate drainage pipes with two straight pipes, hinges to pass right through the joint. Write for Bulletin S-3002. Johnson Rotary Pressure Joints are available for all operating speeds, pressures, mountings.

THE JOHNSON CORPORATION
849 Wood St., Three Rivers, Mich.

Johnson
ROTARY
PRESSURE
Joints
*First in the
Paper Industry*



WATER DRAINAGE BLADE ASSEMBLIES

- Custom designed for your present Fourdrinier.
- Adjustable mounting provides operational flexibility.

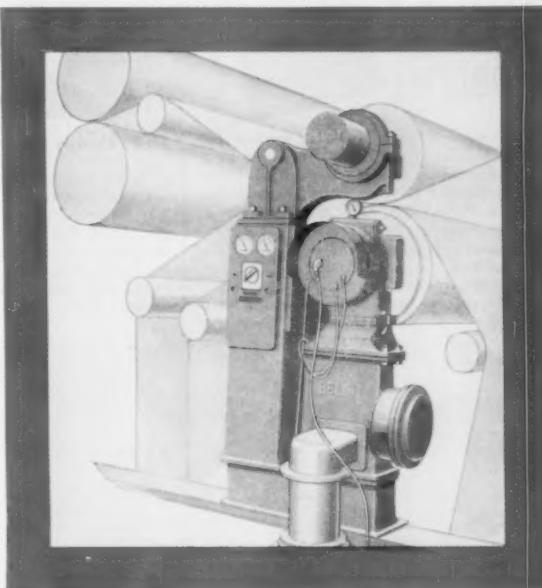


THE MOORE & WHITE CO.

330 East Hunting Park Ave., Phila. 24, Pa.

BELOIT UNIT MODERNIZATION

ONE OF A SERIES SHOWING TYPICAL BELOIT SOLUTIONS TO COMMON MILL PROBLEMS



Beloit air bleed suction press

- Speed limited by drying capacity?
- Sheet rewetting a problem?

Beloit Air Bleed Press can increase output over 20%

Easily and economically installed at the second or third press position, the air bleed press (a Beloit "first") brings you the advantages of higher output . . . increased nip pressures . . . cleaner felts . . . and, most important, an end to sheet rewetting. Let Beloit design and building experience help you modernize that obsolete press section.

» ACT! Write for facts—or let a Beloit Engineer show you the advantages of the Beloit air bleed press. Write to Beloit Iron Works, Beloit, Wis.



BELOIT
PAPER MACHINERY

your partner in papermaking

NEED HELP

with an
INDUSTRIAL
WASTE
TREATMENT
PROBLEM?



If you need help to solve an industrial waste treatment problem, here are two quick steps to the right solution! *First*, send today for your copy of informative Bulletin No. 5578, which gives you a quick picture of what CHAIN Belt Waste Treatment Equipment and processes can do to solve your problem. *Second*, ask for a Rex Man to review your problem and help you select the equipment which will provide effective treatment of your industrial waste. For action, just mail the coupon!

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HOTEL TULLER

...featuring convenience, comfort, quality! A cosmopolitan atmosphere in home-like setting. In the center of all downtown activities. Newly decorated. Ultra modern, comfortable guest rooms... excellent food at moderate prices in our modern coffee shop and cafeteria.

Radio and Television in room.
Air Conditioned rooms in season.

**800 ROOMS \$4
WITH BATH from**

GARAGE available at nominal charge. Free overnight parking for registered guests in PARKING LOT.

FAMILY RATES

No Charge for Children
12 and Under—

*Harry E. Paulsen, General Manager
FACING GRAND CIRCUS PARK*

DETROIT



F. P. Houpt Named Systems Mgr.

... by Fischer & Porter Co., manufacturer of flowmeters, instruments, automation equipment, etc. Mr. Houpt will have charge of the newly created systems application engineering dept. Formerly mgr. of application engineering, he has been associated with F&P 13 years. He attended Duke and Columbia universities.



O. A. Seglem Named by F&P

... regional sales mgr. for Ohio, western New York, western Pennsylvania and West Virginia. He will headquartered in Cleveland. Prior to joining Fischer & Porter Co. he was with Commercial Laboratories, Newark, N. J.

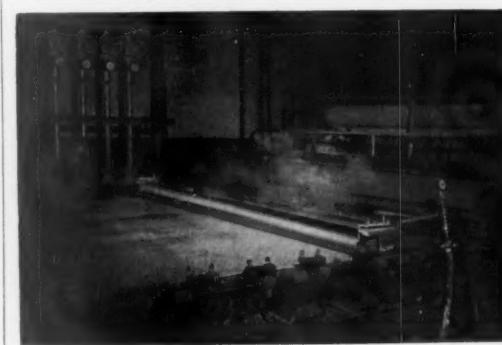
Reliance Appoints Two

Reliance Electric and Engineering Co., because of increased range of products, announces two new management appointments: E. L. BRONOLD becomes sales manager of apparatus sales, and C. PORTER PACKARD, sales policy manager in the dept. of marketing services. Both will headquartered in Cleveland, O. Both were with the Master Electric Co., now a division of Reliance.

MEETING DATES CALENDAR

- Apr. 11 Michigan Div., APPMSA
Hotel Harris, Kalamazoo, Mich.
- Apr. 11-13 Southern Pine Assn., Machinery Exposition
Municipal Auditorium, New Orleans, La.
- April 13-17 28th Packaging Exposition
International Amphitheater, Chicago, Ill.
- Apr. 30-May 3 Penn-Jer-Del Div., APPMSA
Robert Treat Hotel, Newark, N. J.
- May 5 Golden Gate Dist., TAPPI
Claremont Hotel, Berkeley, Cal.
- May 7-8 Cellulose Conference
State Univ. of New York, College of Forestry, Syracuse, N.Y.
- May 7-8 Executives' Conference
Institute of Paper Chemistry, Appleton, Wis.
- May 14 Michigan Div., APPMSA
Hotel Harris, Kalamazoo, Mich.
- May 21-23 Pacific Coast Div., APPMSA, and Pacific Coast Section, TAPPI, Multiple Water Use Seminar
Gearhart Hotel, Gearhart, Ore.
- May 25-27 TAPPI Coating Conference
Hotel Statler, Boston, Mass.
- June 2-4 APPMSA National Meeting
Shamrock-Hilton Hotel, Houston, Texas

ANDREW VAN DER LYN has opened a New York district office for Fuller Co. at 380 Madison Ave., N.Y.C. . . MERTON H. RUBECK, a specialist in multi-cylinder board and roofing machines, has been named service engineer for Albany Felt.



J. H. DUPASQUIER

Gladstone, Oregon
560 E. Clarendon St.

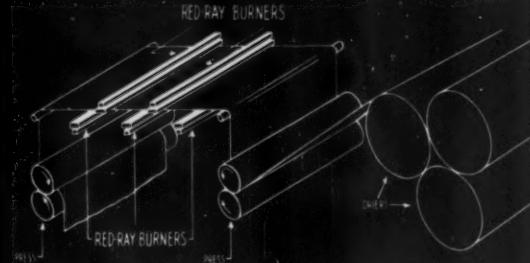
Increase Paper Production with DUPASQUIER DRIPLESS STEAM SHOWER BOX

- Preheats the Web
U. S. patent 2,838,982.
- Changes Water Viscosity
THUS FREEING WET MAT
- Allowing Speed Increase
Custom Built for Any Machine

Write for Illustrated Folder

Canada Pat. 1955
Other pat. pend.

HOT PRESS... Made more efficient—faster



The application of RED-RAY Burners
to Hot Press operation:

REDUCES VISCOSITY

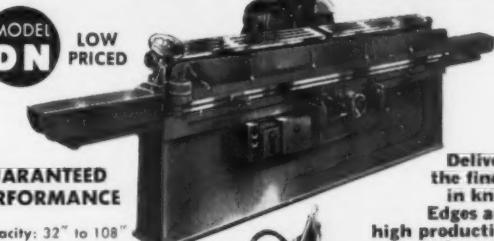
**PERMITS REMOVAL OF MORE
WATER AT THE PRESS**

**Easy to install on existing equipment.
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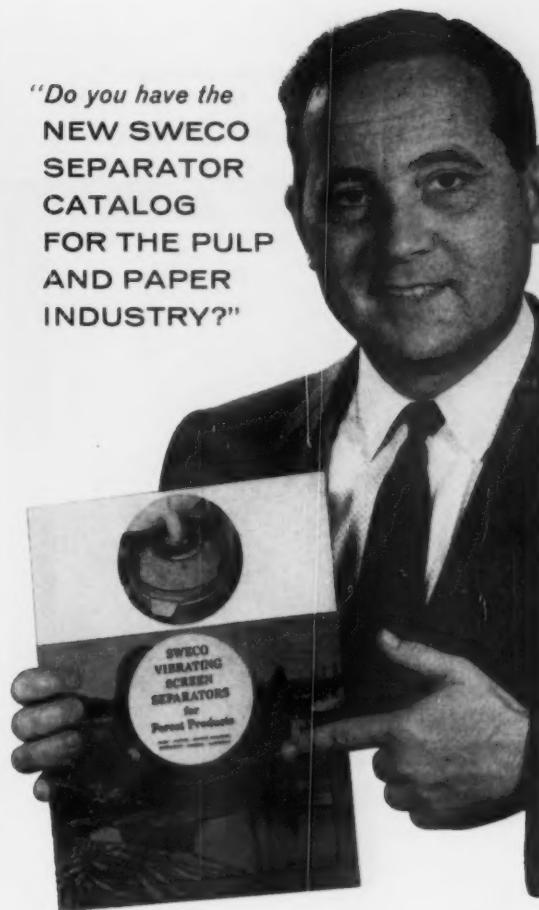
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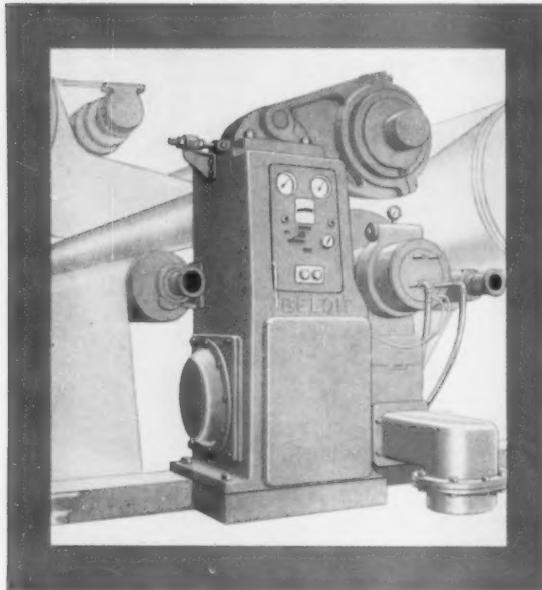
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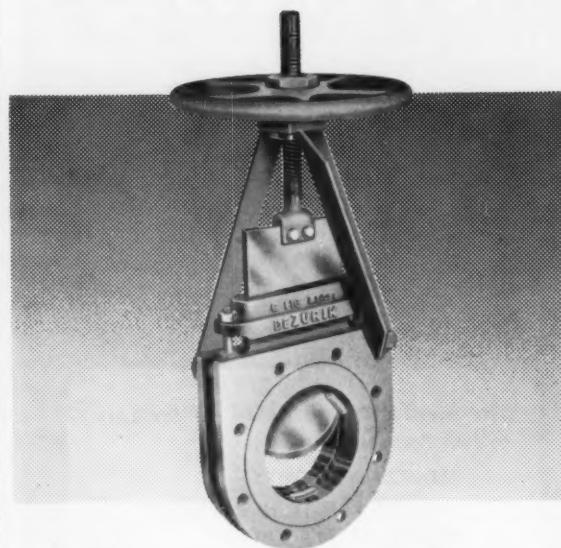
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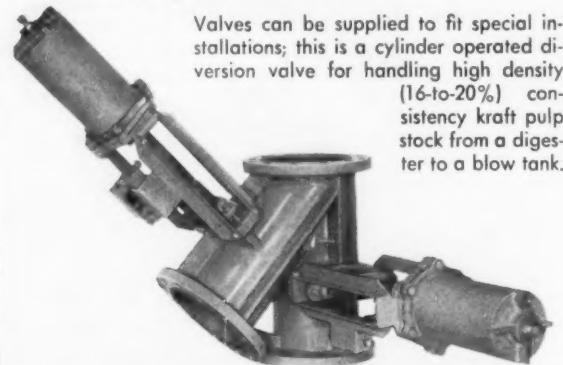
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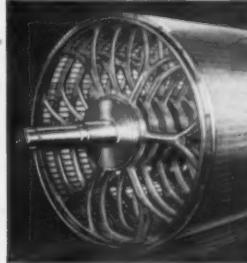
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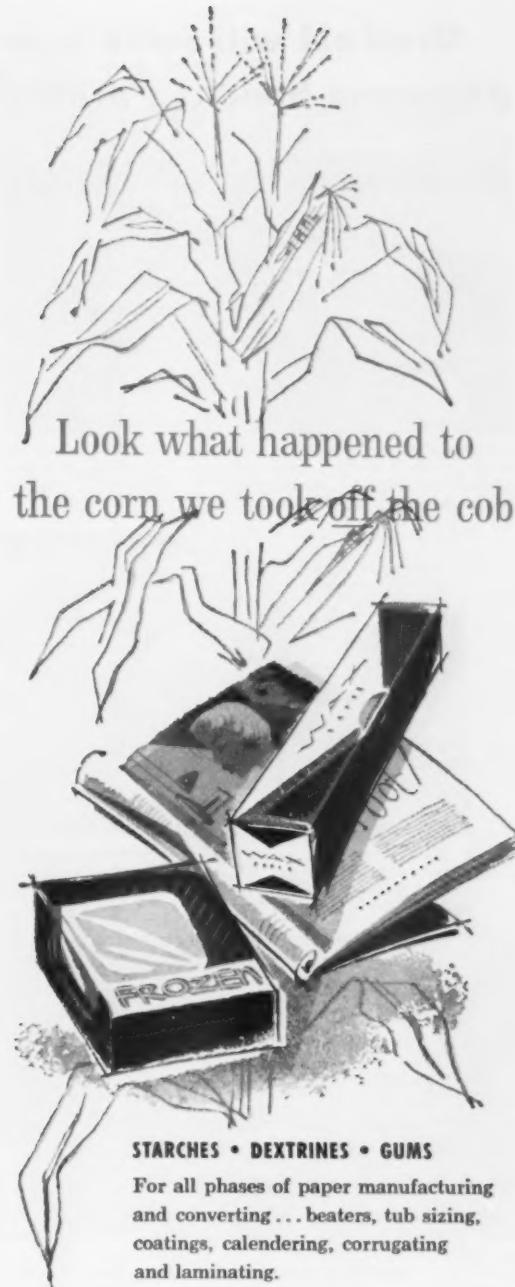
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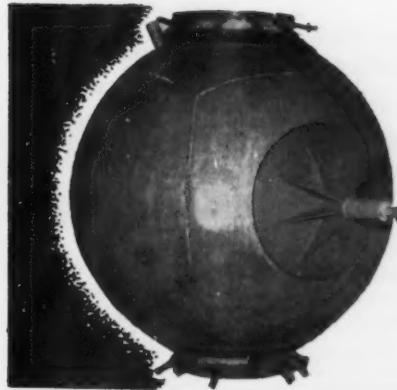
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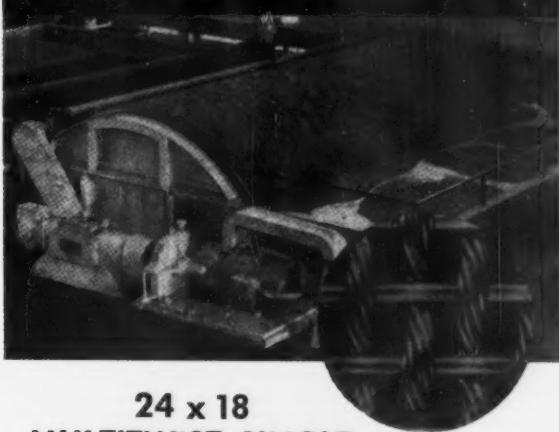
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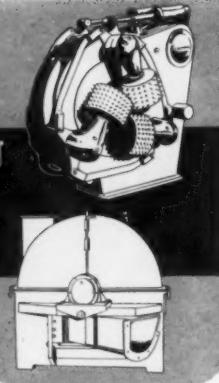
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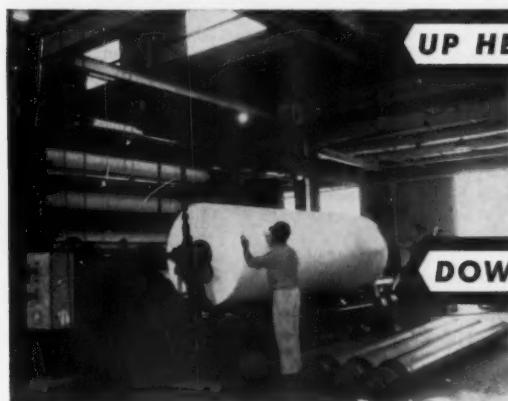
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Lessons for Paper from Plastics

One of the most encouraging aspects—for this industry of the recent National Plastics Exposition in Chicago's Amphitheater was the increasing sentiment among plastics producers that there will be more and more need for "the marriage" of plastics and paper in new products.

Among most of the leaders, there seemed to be common agreement on this point. There was greater interest than ever in paper or pulp and plastics combinations.

A top executive of Macy's New York store warned against trick names for new products, which only befuddle the ultimate consumers, and, often, "scare them away."

It was also emphasized that the conception of plastics as a "substitute" should be broken down.

In the development of new paper products and new paper uses, both of these points might apply with equal force. Give your new products names that are easy to pronounce and easy to remember. And sell new products as superior products and not just as substitutes.

In just eight years, the use of plastics in the United States has increased from 2½ to 4½ billion pounds. The current volume represents a \$2,000,000,000 a year business. The pulp and paper industry in 1959 has a very healthy competitor—and partner.

More About the Paper-Plastics Marriage

We dropped by our favorite pizza pie man the other night to take home one of his succulent concoctions. He makes a good pie—but no matter how fast we run, when we get home the pie is cold. The plain patent coated box just doesn't serve its purpose.

Pizza pies have grown in popularity to the point where they almost outrank the hot dog as America's favorite food. Our pizza man told us that an average store uses about 1,000 pizza boxes/week at a cost of about 5¢/box.

We started to think that perhaps here was potentially big business. Perhaps a bleached kraft could be used with a pigmented coating on the outside for four color advertising. Coke or Pepsi might be interested in paying to put their message on this surface.

A heat-insulating polyethylene or some such product could be coated on the inside to keep the flavor of the pizza until you got home.

But why stop with the pizza pie box? How about the container that you take home from the Chinese restaurant? This isn't any better and perhaps this product, too, could be upgraded.

Our pizza man likes the idea. It's yours for the taking.

Smell of Success

The very prominent Southern newspaper, the *Atlanta Constitution*, has the right idea!

Here's what it said, editorially, in a recent issue:

"Don't let the odor coming from that big mill down on the river disturb you. The smell may not be so sweet, but it is the smell of success and prosperity."

That's sure true, down Georgia way. It was peaches, peanuts, pecans, poultry, pimientos and now—pine products—and the greatest of these in the South are pulp and paper.

Unproved Criticisms of Insecticides

This industry and the general public still has a lot to learn about the effects of the use of chemicals in the forest—used in kill trees and also in the ever renewing battles against destructive insects.

In the magazine *American Forests*, published by the American Forestry Association, Ira N. Gabrielson, president of the Wildlife Management Institute, argues that aerial spraying in the forests is raising havoc with wildlife and is also a threat to humans.

And yet, in the same issue, C. H. Hoffman, assistant director of the entomology research division, U.S. Dept. of Agriculture, takes an opposing stand. He contends that there is nothing to worry about yet—that the worriers haven't proved anything. And he says some assertions of damage are just untrue. He is very enthusiastic about the benefits that will accrue to industry and the public from the use of these chemicals.

Mr. Hoffman says: "Additional basic research and field investigations are needed to evaluate the effects of widespread forest sprayings in different ecological habitats and to develop better methods of overcoming any residue hazards to fish, wildlife, soil, or crops."

So, until more is known on the subject, there is no cause to become panicky, or to quickly accept the pessimistic contentions of professional or dedicated "worry-warts."

Man's Best Friend

Of interest to our readers who make the paper for books, is this gem of wisdom we ran across recently:

"Books are a man's best friend. You do not have to take them walking before bedtime nor do they scratch up the neighbor's rose bushes. They do not borrow money from you. And if they keep you awake till the wee small hours, as mine often do, they do not leave you with a headache the next morning. . . ."

The author of these lines is a sports writer, David Condon, on the Chicago Tribune.

"Age of Paper" was Popular Song

If you think the paper dresses, paper bathing suits, etc., you may have seen lately are really new, you have another guess coming.

One of the popular songs heard in London music halls in 1869 was a number called "The Age of Paper." The words were sung by Howard Paul, who appeared "attired completely in a suit of paper." This is reported in a special issue of the Cornwall Standard-Freeholder on Howard Smith Paper Mills' 75th anniversary.

Some paper wearing apparel, like aprons, at long last appear here to stay. It certainly took a long time to put them over.

Battleship Used 100 Tons Paper

When the U.S. battleship Massachusetts was built, approximately 100 tons of paper was used in its construction . . . 16 tons for blueprints alone.

No matter what is being planned, built or merchandized, the first thing to be used is paper.



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